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ABSTRACT

This instructor's guide contains the materials required to teach a competency-based course in pharmacology for practical nursing. The following are covered in the five instructional units: calculating medication dosages, documenting medications, identifying classification and effects of medications, administering medications, and assisting with intravenous therapy. Each unit contains some or all of the following: objective sheets, information sheets, assignment sheets, job sheets, step-by-step lesson plan, optional supplemental instructional materials, learning activity package sheets that allow instructors to individualize instruction for some/all students, transparency masters, assignment sheets, job sheets, written tests, and assignment sheet and test answers. Academic skills training is combined with vocational training throughout the instructional materials. A system of icons has been used to help instructors identify activities that promote basic skills development and has been infused into the curriculum for the following basic skills areas: reading, science, creative thinking/problem solving, writing, oral communication, employability, math, interpersonal skills, and social studies. A basic skills documentation matrix correlates skills with units of instruction. (MN)

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Pharmacology

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CIMC
Teacher Edition

Oklahoma Department of
Vocational and Technical Education
1500 West Seventh Avenue
Stillwater, OK 74074-4364

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HO1031

Pharmacology

Instructor's Manual

Upfront

Instructor's Guide

Answers

Test Code Sheets

Instructional Supplement

Developed by the
Curriculum and Instructional Materials Center
for the Division of Health Occupations
Oklahoma Department of Vocational and Technical Education

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TABLE OF CONTENTS

Instructor's Manual

Upfront

Foreword v
Acknowledgments vii
Use of this Publication ix
Basic Skills in Curriculum xv
Measuring Student Performance Gains xix
Required Criteria for a Competency-Based Educational Program xxi
Corrections and Suggestions xxiii

One set per unit of the following components:

- Instructor's Guide
- Answers
- Test Code Sheets

Instructional Supplement (one set for all units)

Instructor's Resource Package

One set per unit of the following components:

- LAP Sheet
- Transparency Masters
- Written Test
- Other required media

Student Workbook

One set per unit of Objective Sheets, Information Sheets, Assignment Sheets, and Job Sheets for the following units:

UNIT 1
Calculating Medication Dosages I-1

UNIT 2
Documenting Medications II-1

UNIT 3
Identifying Classification and Effects of Medications III-1

UNIT 4
Administering Medications IV-1

UNIT 5
Assisting with Intravenous Therapy V-1

FOREWORD

This publication is one of the courses from the Practical Nursing series of competency-based training programs designed to coordinate the job-related experience and knowledge needed by personnel working in a practical nursing position.

The information found in each of the courses in the Practical Nursing series will help you in planning and implementing a current, practical approach to learning. Although this series reflects a systematic approach to instructional materials development and the latest in educational technology innovations, the instructor should adapt and modify information in the Practical Nursing series to coincide with local conditions and specific student/client needs.

Roy Peters, Jr.
State Director
Oklahoma Department of
Vocational and Technical Education

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Others who deserve recognition are: Tracy Boyington, Technical Communication Specialist, for revising the text; Claire Zevnik-Hart, Technical Communication Specialist, for her photography, Lisa Tillman, LPN, for her technical review of the material; Judy Horn, RN, Central AVTS Practical Nursing Instructor, for her technical assistance; Jennifer Owen, for formatting the text; and Ann Johnston, for her editing work.

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USE OF THIS PUBLICATION

INSTRUCTIONAL UNIT

Each unit of instruction is based on the performance needed for successful employment in an occupational area. *Pharmacology* contains five units of instruction. A complete unit may contain most or all of the following components: Objective Sheet, Instructor's Guide, Information Sheet, Instructional Supplement, Assignment Sheet, Job Sheet (and Skill Test Record), Written Test, Answers (to Assignment Sheets and Written Test), Transparency Masters, Learning Activity Package (LAP) Sheet, Handouts, and other required media. These components are organized within three packages, as follows:

Instructor's Manual

- Upfront pages (title page, copyright page, table of contents, foreword, preface, acknowledgments, measuring student performance gains, required criteria for a competency-based education program, and corrections and suggestions)
- Curriculum and Duty/Task Crosswalk (as appropriate)
- Basic Skills Matrix
- One set per unit of:
    - Instructor's Guide
    - Answers
    - Test Code Sheets
- Instructional Supplement (one set for all of the basic skills enablers appearing in the book)

Instructor's Resource Package

- One set per unit of:
    - LAP Sheet
    - Transparency Masters
    - Written Test

  ☑ **NOTE:** The three components listed above may be photocopied by the instructor.

- Handouts (as appropriate)
- Other required media (as appropriate)

Student Workbook

- Objective Sheets
- Information Sheets
- Assignment Sheets
- Job Sheets

Instructor's materials include the *Instructor's Manual*, the *Instructor's Resource Package*, and the *Student Workbook*.

Unit components are tied to measurable and observable learning outcomes. Instructor's are encouraged to supplement unit components with other resources to make units as responsive to local conditions and student needs as possible.

Most units of instruction are designed for use in more than one lesson or class period. Instructors should determine the following for each unit:

- amount of material that can be covered in each class period;
- skills that must be demonstrated;
- supplies and equipment needed;
- amount of class time needed for demonstrations;
- amount of class time needed for student practice;
- supplementary materials to be ordered; and
- resource persons who must be contacted.

Objective Sheet (Student Workbook)

The Objective Sheet summarizes each unit for the student and the instructor. The Objective Sheet includes the following sections:

Introduction — This section introduces students to the unit topic and its importance to them. The Introduction also relates the unit to students' experiences and their "need to know;" it helps capture their interest and focus their attention on the specific topic.

Prerequisites — This section is included if any of the units in the book have prerequisites. A prerequisite may be one or more units from the same book or from other books, which must be completed before beginning the unit. (If no prerequisites exist for any of the units in the book, this section is omitted.)

Focus Assignments — Each unit has two Focus Assignments: Prereading and Writing. The Prereading assignment requires the student to read appropriate sections from unit references, from the *Instructor's Resource Package*, or from the student's textbook. The Prereading assignment leads into the Writing assignment, which assigns students a short written activity based on the Prereading assignment. Because the Focus Assignments help promote the use of basic skills, they include appropriate basic skill icons and enablers. (Activities for the basic skills associated with the Focus Assignments are included in the Instructional Supplement in the Instructor's Manual.)

Unit Objective — The Unit Objective states the overall goal of the unit. It identifies what the student will be able to do after successfully completing the unit, as well as the standards used to measure student performance.

Specific Objectives — The Specific Objectives outline the teaching sequence of the competencies required to reach the Unit Objective.

The Specific Objectives on the Objective Sheet should be emphasized to all students at the start of each unit and throughout the teaching/learning process. This will help answer student questions about performance requirements for each unit. Specific Objectives can also assist instructors in determining teaching strategies and instructional methods. Instructors should prepare for each unit by deciding how each objective could best be taught.

Instructors should modify, delete, or add objectives to meet the needs of students and the community. When objectives are added, the instructor should remember to provide the needed information, Assignment and/or Job Sheets, and criterion-referenced test items.

Information Sheet (Student Workbook)

The Information Sheet provides the "must know" content essential for meeting the cognitive objectives in the unit. Information is usually presented in print on the Information Sheet, but may also be presented in other formats, if appropriate, such as on videotape, software, or other media. (Additional formats for presenting the Information Sheet objectives allow this component to be interactive.)

Many objectives on the Information Sheet begin with a "Words You Should Know" section. This boxed item identifies terms relating to the objective, and gives a definition for each. Terms in the "Words You Should Know" boxes are tested only indirectly with the objective information (not on the Written Test as a matching exercise).

The Information Sheet may include clarifying NOTES and EXAMPLES, as needed. In the left column, students and instructors are reminded of the optional and/or required activities and resources available for a particular objective.

Students should read the Information Sheet for each unit before it is discussed in class. Space is provided in the margins for both students and instructors to add notes that clarify and/or expand upon the information presented.

Assignment Sheets (Student Workbook)

The Assignment Sheets address the learning levels at or above the application level of Bloom's taxonomy. They allow students to perform non-psychomotor activities related to occupational tasks. Assignment Sheets also provide students with an opportunity to use higher-order thinking skills, such as problem-solving, synthesizing, analyzing, and evaluating. In addition, they may provide opportunities for cooperative learning and more detailed oral/written communication activities.

Assignment Sheet activities can be "paper and pencil" activities, as well as those using computer software, videotapes, models, handouts, or other resources as appropriate. All Assignment Sheets include basic skills icons and enablers (identified in the left margin).

Job Sheets (Student Workbook)

Job Sheets gives students step-by-step procedures for performing manipulative or psychomotor occupational tasks or jobs. The Job Sheet also functions as a Skill Test Record, facilitating the instructor's evaluation of each student's performance. Both the process and the end-product are evaluated. Diagrams, illustrations, and photographs are included, as needed, to assist students in completing the job.

Individual Job Sheets may include various warnings written to conform to the latest specifications of the American National Standards Institute (ANSI). DANGER is used if the situation *will* lead to death or serious injury if not avoided; WARNING is used if the situation *could* lead to death or serious injury if not avoided; CAUTION is used if the situation could lead to minor or moderate injury; NOTICE is used if the situation could cause property damage only; and IMPORTANT is used to refer to operating or maintenance tips. Each type of warning appears on the Job Sheet with an ANSI symbol.

The instructor should demonstrate the procedure outlined in each Job Sheet. Instructors may also have to localize specific procedures.

Instructor's Guide (Instructor's Manual)

The Instructor's Guide leads instructors step by step, objective by objective through the unit. It recommends instructional strategies for the Focus Assignments and for each of the Specific Objectives. Resources and activities are labeled "R" for "Required" or "O" for "Optional." Optional and Required resources (publications, videos, computer software, and other media) are listed, as well as unit references. These resources can be used to supplement the instructor's knowledge of the subject area and to help students with particular interests or occupational objectives. In addition, the Instructor's Guide provides guidelines for evaluating student performance.

Instructors should study the Instructor's Guide before introducing the unit and allow time to obtain supplemental materials, prepare audiovisual materials, and contact outside resource persons. Specific tasks of the instructor will vary with each unit.

Answers (Instructor's Manual)

This component lists the answers to all of the Assignment Sheets and the Written Test questions.

Test Code Sheet (Instructor's Manual)

The Test Code Sheet matches Written Test questions to objectives. Basic skills codes are listed in chart format for each question. Each unit has a Test Code Sheet. For more information, see the CIMC publication *Measuring Learning & Competency Gains: The Pretest/Posttest Approach*.

Instructional Supplement (Instructor's Manual)

The Instructional Supplement provides the instructor with strategies for teaching the basic skills identified on the Focus Assignments, Assignment Sheets, and Job Sheets. One Instructional Supplement applies to all of the basic skills identified in all of the units of instruction in a book.

LAP Sheet (Instructor's Resource Package)

The LAP (Learning Activity Package) Sheet for each unit allows the instructor to individualize instruction for some or all students. The LAP Sheet guides the student through each unit step by step, ensuring that the student receives the necessary instruction.

Transparency Masters (Instructor's Resource Package)

Transparency Masters are provided so that instructors can make transparencies to accompany specific units. Transparencies allow students to *see* as well as hear the information being presented, thus reinforcing the learning process. They also direct attention to the topic under discussion. Transparencies should be made from the Transparency Masters and placed where they will be readily available when needed. Transparencies should be left on the screen only when the related topics are under discussion.

Each Transparency Master also appears in the appropriate unit in the Student Workbook, at the location where the information is referenced (such as a Figure on the Information Sheet).

Written Test (Instructor's Resource Package)

The Written Test provides criterion-referenced evaluation of the Specific Objectives from the Information Sheet (Assignment Sheet and Job Sheet objectives are not evaluated by the Written Test). If instructors have added, deleted, or modified any objectives, appropriate changes should be made to the Written Test as well.

The Written Test serves as both a pretest and a posttest. In order to measure and document student competency gains as required by the latest Carl Perkins regulations, and as outlined in the Oklahoma-developed system of standards and measures, it is *essential* that the same test be used as a pretest and as a posttest. If instructors choose to use tests other than the Written Test, they should make sure that the same instrument is used for each activity — pre- and posttest.

The Written Test may be photocopied for classroom use, or additional copies may be ordered from the CIMC by calling 1-800-654-4502, or (in Oklahoma) 1-800-522-5810, ext. 589.

A detailed explanation of the Oklahoma plan for standards and measures and the Carl Perkins requirements is included in the CIMC publication *Measuring Learning & Competency Gains: The Pretest/Posttest Approach*. This booklet — and accompanying software to assist in calculating and recording student gains — are available to Oklahoma instructors through their school's vocational testing liaison.

To further assist instructors, the CIMC develops Test Code Sheets for each Written Test in its more recent publications, including this one. (These sheets are explained in detail in the publication mentioned above.) The Test Code Sheets assist in verifying that the Written Test is a valid instrument for measuring student learning and competency gains.

COMPETENCY PROFILES

A Competency Profile is available from the CIMC. Competency Profiles document student performance. Each profile lists the specific competencies covered in the book, and provides space for recording the student's level of performance on each competency.

PAGE NUMBERING

Each unit and each page in a CIMC publication has a number, shown in arabic numerals. The page number gives the package title, the book title, the component name, the unit number, and the page number within the unit. For example, the page number for page 1 in Unit 5 of the *Student Workbook* would appear as follows:

> STUDENT WORKBOOK - **Pharmacology**
> OBJECTIVE SHEET - **CIMC** - 5 - 1

METHODS OF DISSEMINATING MATERIAL

For best results, provide each student with a copy of the Student Workbook. Students should be allowed to keep their Workbooks at the end of the course or training program.

TEACHING METHODS

Keeping students motivated is a challenge. Supplement each unit with current information, personal experiences, and other information. In a group setting, prepare for each unit by determining the best way to teach each objective, and allow for student input. For individualized instruction, provide opportunities for the student to become involved in planning and being responsible for his or her own education.

BASIC SKILLS IN CURRICULUM

The CIMC has always been mindful of the importance of reinforcement (and sometimes remediation) of students' academic skills as they progress through vocational training, and has always included activities in its materials to enhance and promote use of these skills.

Recent state and federal legislation mandates vigorous basic skills development in vocational education in the wake of demands by industry that workers *must* be academically, as well as technically, competent, given the nature of the highly complex work place. In response, the CIMC has taken the following steps to document that, indeed, the instructional materials *do* combine academic skills training with the vocational training. In addition, concerted efforts have been made to "beef up," or enhance the basic skills instruction already present. Following is a brief description of those processes:

Basic Skills Icons and Enablers

To assist teachers and students in identifying activities that promote basic skills development, the CIMC has implemented a marking system that uses simple graphic symbols, or icons, and a list of specific tasks, or enablers, to identify the basic skill or skills that are called for in each job or assignment sheet.

Each of the nine broad skills areas—reading, writing, mathematics, science, oral communication, interpersonal or relating, creative thinking and problem solving, employability, and social studies—is represented by the icon presented below.

Reading

Writing

Math

Science

Oral Communication

Interpersonal or Relating

Creative Thinking/
Problem Solving

Employability

Social Studies

When an activity involving one of these basic skills is identified, the corresponding icon is placed in the left-hand margin of the job or assignment sheet. The basic skills training is further defined by retrieving the specific, or enabling, skill that is required by consulting a list of over two hundred and fifty enablers that has been compiled and grouped with each general basic skill. This enabling skill is placed directly below the icon.

As an example, an exercise that requires a student to conduct library research would make necessary the use of specific reading comprehension and research and reference skills. The basic skills that the exercise promotes would be depicted in the left-hand margin as follows:

ASSIGNMENT SHEET ***PLANNING LIVING SPACE FOR HUMAN NEEDS*** **1**

Name ______________________________ Score __________

OBJECTIVE 10 **Define personal territory.**

INSTRUCTIONS

- As discussed in Objective 1, each person has an invisible "space bubble" or comfort zone. A comfort zone is the space between oneself and others that brings a feeling of well-being. When one's comfort zone is crowded or invaded, discomfort often results. Therefore, personal territory needs should be a prime consideration when planning living space.
- For each of the following situations, draw your estimated comfort zone around the figures provided.
- Indicate how many inches from your body the comfort zone extends.
- Consider how that comfort zone changes in different situations. Answer the questions that follow.

Reading Comprehension
- Gain factual information

Functional Reading
- Follow written instructions
- Use content area vocabulary

Language
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Basic Skills Documentation Matrix

Another component of the CIMC basic skills instructional plan is the "Basic Skills Documentation Matrix." The matrix graphically summarizes the basic skills training included in the vocational program, unit by unit. It should be helpful to teachers in planning their instruction, and to administrators as documentation that basic skills **are** being addressed during the vocational training.

The matrix for this publication is included as an 8½" by 11" foldout in this *Instructor's Manual*.

Matrices have been developed for most CIMC publications. For more information on those available for other programs, call the CIMC at 1-800-654-4502.

Instructional Supplement

The supplement is a tool for the instructor to use in helping students apply the basic skills in Assignment Sheets and Job Sheets. Some supplements are appropriate for use with all students; some are for use only with those students who do not understand the academic skills called for in the exercise.

MEASURING STUDENT PERFORMANCE GAINS

When you examine this book, you will notice that separate written pretests are no longer included in the units of instruction. Each CIMC unit now contains only a single Written Test. This test should be used as **both** pretest and posttest by giving it once before students start a unit and again when they have completed the unit.

The reason for using a single instrument as both pretest and posttest is so that direct comparison of each student's competencies before and after instruction can be made accurately. This comparison enables precise calculation, documentation, and evaluation of student **performance gains**.

Accurate performance gains analysis is an important requirement of the new Carl Perkins legislation for vocational education. Teachers can make an important contribution to the performance accountability mandated by the new federal legislation by carrying out accurate performance gains analysis for their students, and making this data available to students, parents, and administrators.

This analysis is easy to do and requires only simple calculations and record keeping. Detailed information regarding performance gains analysis is contained in the CIMC publication, *Measuring Learning & Competency Gains: The Pretest/Posttest Approach*. In addition, the CIMC has developed a computer program, CARL, which will perform all necessary calculations and will print out a record form of all information required for gain score analysis. Copies of CARL and the publication are available through your local testing liaison (in Oklahoma), or from the CIMC at 1-800-654-4502.

REQUIRED CRITERIA FOR A COMPETENCY-BASED EDUCATION PROGRAM

Criterion	Discussion	CIMC component meeting criterion
1. Instruction is based on clearly-stated learning objectives that are: a) observable and measurable, and b) communicated in writing to students before instruction begins.	Learning objectives drive CBE. Objectives are the "competencies" that learners must achieve. Each objective must clearly state what *learners* must *do* to demonstrate acquired skill or knowledge. Verbs in learning objectives are active and precise, stating the exact performance expected of learners. The objectives should also specify the standard or level of performance required. Objectives can be at any level of Bloom's Taxonomy and can include the cognitive, psychomotor, and affective domains. Higher-order cognitive skills should be included.	Objective Sheet
2. Instruction is aligned with the stated learning objectives	In CBE, the objectives specify what is taught. "Content" should relate to one or more objectives. The curriculum should cover all objectives with relevant information.	Information Sheet
3. There is a student evaluation system that is: a) criterion-referenced, and b) aligned to the learning objectives and the curriculum.	In CBE, the aim is to bring the performance of *all* learners up to a pre-defined standards and competencies. Learners work on each competency until they achieve "mastery"; the evaluation system should test and record this mastery. Learners can restudy and retest as often as needed. Specific remediation activities should also be available to learners when needed. The evaluation system focuses on what each student has achieved, not on what the instructor has "taught." The "constant" in CBE is student performance; the "variables" are time and resources. (This differs from traditional systems where learners get one chance at mastery; some succeed and some fail. In such systems, time and resources are constant and student achievement is variable.) If an evaluation is criterion-referenced, successful learner performance is defined by (or *referenced* to) mastery of pre-set objectives and standards (or *criteria*): there must be a careful match (or *alignment*) between what the student should master (objectives), what is taught (curriculum), and what is tested. Objectives, curriculum, and evaluation system must all match.	Written Test and Job Sheet/Skill Test

Criterion	Discussion	CIMC component meeting criterion

4. There is an observable management system of cognitive skill practice that provides for, promotes, and documents mastery learning.	For both cognitive and psychomotor skills, a CBE program must have a system of maintaining records of which skills and activities each learner has completed, which ones are in progress, and which ones have not yet been completed. Completion means "mastery"; no skill is completed until the learner has achieved the mastery level. The record system should promote feedback on student skill attainment to *both* instructor and learners, provide for remediation as needed, and encourage reevaluation of learner performance until mastery is achieved. Appropriate remediation strategies often should consider learning styles and other individual differences among learners. Learners should work on skills and activities until they achieve mastery. They should not be "passed on" without mastery. While learners may move ahead and work on other skills (i.e those for which all prerequisite skills have been mastered or those without prerequisites), work should also continue on the skills still requiring mastery. Students should not attempt higher-order skills until all prerequisite skills are mastered.	Assignment Sheet
5. There is an observable management system of psychomotor skill practice that provides for, promotes, and documents mastery learning.		Job Sheet/Skill Test
6. Skill mastery records are maintained for each learner, and learners have access to and make use of these records to monitor their skill acquisition.	Records should clearly indicate the skills each learner has mastered. One such record should profile or list the competencies that have been mastered and those to be mastered. Other performance indicators can be added and kept in a portfolio for each learner. Learners should have ready access to their portfolios to monitor their own progress in skill mastery and competency attainment.	Competency Profile

CORRECTIONS AND SUGGESTIONS

The Curriculum and Instructional Materials Center (CIMC) wants to provide vocational instructors and students with accurate and effective materials. Although the CIMC strives to maintain the highest standards of development and production, oversights sometimes do occur. If you find any errors in this or other CIMC publications, or have suggestions for improving their usefulness in vocational programs, please notify the CIMC staff. To do this, please identify the page(s) affected and write any comments to clarify the error or suggestion. Use the spaces below. Then, simply fold (bottom of page *upward*, top *downward*), secure, and mail.

This information will be used to correct the publication before the materials are reprinted. To ensure that the material is updated on a timely basis, notify the CIMC of necessary corrections as soon as possible after discovering the error.

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Pharmacology

Instructional Supplement

Reading

Science

Creative Thinking/ Problem Solving

Writing

Oral Communication

Employability

Math

Interpersonal or Relating

Social Studies

Reading Comprehension

- If students have difficulty gaining factual information:
  - Remind students that they probably read for many reasons. One of these reasons is to learn new information. The reason you have for reading helps determine the way you read.
  - Have students discuss the different techniques they use when reading. Lead the discussion so that students realize that, when they read for fun, they may read quickly; they may skim some parts and read others more carefully. Reading for facts requires more care.
  - Suggest that one technique found to be successful includes the following steps:
    - Identify in advance what it is you want to learn. Be certain that before starting to read, you have a clear understanding of what you want to accomplish. It sometimes helps to list the questions to be answered.
    - If the material to be read includes a table of contents, study it to get an understanding of how the material is organized.
    - Scan through the material noting headings, highlighted information, illustrations, etc.
    - Read the material carefully. Take notes or highlight as you read, listing or marking the information you want to learn. Note key words and ideas.
    - Study your notes/highlighted material. Ask yourself if you found all you wanted to learn. If not, read the material again or locate another source for the information.
  - Tell students that they should find a personal technique for reading to learn factual information.

Research and Reference

- If students have difficulty selecting useful resources:
  - Review the different types of resources available to students. Have volunteers tell what kind of information can be found in each resource type. Have them discuss the types of projects on which each resource can assist.
  - Help students learn how to locate each resource in libraries, resource centers, or media centers.

Functional Reading

- If students have difficulty interpreting forms and records:
  - Remind students that interpreting forms and records is a skill they will be practicing throughout life. We must read and interpret forms or records almost daily. Have students volunteer to identify the types of forms or records they will encounter or have already encountered.
  - Compare the interpretation of forms and records to reading a page. Each part of the form or record has a specific purpose. Suggest that, when they have a form or record to interpret, students should carefully study the headings and the sections within the form or record, as well as the key or any other information that will help in understanding the meaning of the form or record.
- If students have difficulty following written instructions:
  - Discuss the possible consequences of not following instructions precisely.
  - Review the *importance* of following written instructions. Give appropriate scenarios when written instructions are not followed or are not followed completely and correctly.
  - Discuss the *relationship* between the order of written instructions and the appropriate outcome. Emphasize the need to follow written instructions in their proper order. Use examples where the order of instructions in a sequence is critical to the outcome of the task.
  - Explain to students that one of the keys to following written directions successfully is to read the directions completely before actually beginning to follow them. Doing this ensures that you will not be surprised as you work through the steps. It also gives you an opportunity to ask questions about steps you do not understand.
  - Tell students that, after they have read the directions and understand what to do, they should go back to Step 1 and follow the directions step-by-step (without skipping any steps).

    Remind students that it is important to follow steps in order, even if they think they already know what to do.
- If students have difficulty using content area vocabulary:
  - Remind students that nearly every occupation or group uses words that have specific, specialized meanings to others in the same occupation or group. Have them name and define some content area, technical, or "slang" words with which they are familiar.

- ☐ Explain that using content area or technical words makes it easier for people within groups or occupations to communicate ideas accurately. Remind students that often the same word may have a generic meaning to the majority of people, but a very specific meaning within an industry.
- ☐ Review key terms and concepts, so that students hear, see, write, and say them.
- ☐ Have students suggest ways to learn the meanings of the vocabulary specific to what they are studying. Provide opportunities for students to practice using the terminology they will need.

- If students have difficulty interpreting abbreviations/acronyms:
  - ☐ Present examples of appropriate abbreviations and/or acronyms. Use actual examples from specific sources, such as newspapers, books, and others.
  - ☐ Ask students to interpret the examples. Give hints, if needed.

- If students have difficulty reading aloud:
  - ☐ Explain the difference between *talking* and *speaking*. Speaking involves using effective verbal skills (such as proper diction, grammar, pronunciation) as well as effective nonverbal skills (such as visible body movements, facial expressions and gestures, and posture) to communicate a message.
  - ☐ Review the phases of communication:
    - ▸ Speaking — Using verbal and nonverbal expression to transmit a message to a receiver for a particular purpose

      ☑ **NOTE:** The speaker must use effective verbal skills (proper diction, grammar, pronunciation) as well as effective nonverbal skills (visible body movements, facial expressions and gestures, posture) to communicate a message.
    - ▸ Listening — Receiving, processing, and evaluating verbal and nonverbal message expressed by sender for a particular purpose

      ☑ **NOTE:** Receiving, processing, and evaluating the speaker's message involves staying alert, resisting distractions, noting nonverbal cues, and concentrating on what the speaker is saying—rally hearing the speaker's message.
  - ☐ Review the elements of proper voice quality when reading aloud: proper pitch, articulation, force, and pronunciation. (Define these elements first.)

Language

- If students have difficulty using standard grammar, spelling, and capitalization:
  - ☐ Discuss the importance of using standard grammar and correct spelling, punctuation, and capitalization. Include the fact that it is more difficult to read and understand incorrectly-written materials, and that readers will take correctly-written materials more seriously.
  - ☐ List common errors in grammar, spelling, punctuation, and capitalization in materials written by your students. Review this list with the class or with individuals.
  - ☐ Help students to develop a checklist to use as they write, edit, and proofread. Each student can personalize his or her own checklist by adding the items that present the most problems to him or her. If spelling is a problem, suggest that the student keep a personal dictionary of frequently used or misspelled words.
  - ☐ Have students work with partners or in groups and review each others' writing. Allow time for students to discuss the comments with their partners or groups.
  - ☐ Suggest that as students write or proofread their own writing, they circle or mark places where they are unsure of the correct grammar, punctuation, capitalization, or spelling. Provide materials (English grammar/mechanics books or style guides) or class time for students to review, revise, or correct their writing.

- If students have difficulty stating ideas clearly:
  - ☐ Remind students to determine in advance the ideas they want to convey and the audience they want to reach. Audience analysis is very important in presenting ideas clearly and appropriately.
  - ☐ State that audience analysis begins early, such as when students are doing their research. They must describe their intended audience and decide how to best present their ideas to that audience. Options for communicating with the audience include written reports, charts, graphs, diagrams, etc. Explain how the audience influences the way in which the information is presented (such as very simple text with pictures, for children; a great deal of background information, for people who know nothing about or very little about the subject; or, little background but more complex information, for experts).

  - Have students work with a partner or in a small group. Provide time for them to share ideas with each other and make suggestions for making ideas clearer.
  - Remind students that careful preplanning and the use of correct grammar, spelling, punctuation, and capitalization are especially important if their ideas are to be clearly understood by the intended audience.

Composition

- If students have difficulty using complete sentences:
  - Remind students that complete sentences should be used in all writing assignments requiring paragraphs. Discuss what makes a group of words a sentence. Have students practice recognizing complete sentences using either exercises from any grammar/language arts text or self-prepared sentence activities.
  - Have students volunteer to compose complete sentences using words or topics you suggest. Write the sentences on the board. Have other students analyze the sentences to determine if they are complete. If not, have a volunteer rewrite them as complete sentences.
  - Review the definition of "sentence fragment."
  - Ask students for the three things needed for a complete sentence: subject, verb, and complete thought.
  - Create samples of complete sentences and sentence fragments. For each sample, ask students whether each is a complete or fragmented sentence. Ask whether each sample answers the questions "who or what did something?" and "what happened?" For those samples identified as sentence fragments, ask students for one or more ways of completing the sentences. Continue until you are sure that students are comfortable with this method for determining if a sentence is complete.
  - Stress the importance of using complete sentences in all "sentence or paragraph" style writing.

Research

- If students have difficulty taking notes:
  - Remind students of the importance of note-taking to the preparation of the final product. Explain that, because notes are for the student's own use, students should develop their own note-taking style. It will also be easier to prepare the final product if students take notes in their own words (instead of copying directly from the original source).

  - Have students volunteer to discuss some of their own note-taking techniques. Suggest that others may wish to experiment with some of these techniques.

Operation and Calculation

- If students have difficulty calculating with whole numbers:
  - Review basic skills in addition, subtraction, multiplication, and division.
  - Review mathematical terminology. (For example, "compare" indicates that you must subtract.)
  - Suggest the use of a calculator to check answers.
- If students have difficulty calculating with fractions:
  - Review the appropriate procedure for adding, subtracting, multiplying, or dividing with fractions.
  - Demonstrate sample calculations using the appropriate procedure(s).
- If students have difficulty calculating with decimals:
  - Show how the decimal system is based on groups of ten.
  - Demonstrate how our money system is a decimal system.
  - Review addition, subtraction, multiplication, and division skills using decimals. Demonstrate sample calculations.
- If students have difficulty converting whole numbers to fractions, solving numerical expressions, or solving formulae and equations, demonstrate sample calculations using the appropriate procedure(s).
- If students have difficulty converting units of measure:
  - Demonstrate how the same amount can be measured in different units.
  - Explain the theory behind the formula.
  - Demonstrate sample calculations using the appropriate procedure(s).

- If students have difficulty performing metric calculations:
  - Explain how units of the metric system relate to each other.
  - Demonstrate sample calculations using the appropriate procedure(s).

Math Application

- If students have difficulty solving word problems:
  - Discuss the approach to solving word problems. Instruct students to read the information carefully, noting the key elements of the problem.
  - Solve a sample word problem similar to the problems to be solved by students.
- If students have difficulty selecting and applying mathematical formulas:
  - Review basic math formulas and math skills with the class or with individual students as necessary.
  - Remind students that basic math skills are used daily in such ways as counting change and paying for purchases. Remind them that they use basic mathematical formulas, such as addition and subtraction, to figure their wages and to balance their checkbooks.
- If students have difficulty using English and metric measures:
  - Review the metric system.
  - Provide students with conversion tables.
  - Provide students with English and metric liquid and linear measuring instruments. Have them make measurements with each system and compare the differences.
- If students have difficulty solving ratio/proportion problems, demonstrate sample calculations using the appropriate procedure(s).

Functional Math

- If students have difficulty making measurements:
  - Remind students that a key to

    - Review the units of measure in the English and metric systems, if appropriate.
    - Demonstrate the correct procedure for making the required measurement(s).

- If students have difficulty solving practical problems:
    - Review the problem-solving procedure associated with the problems they have been assigned.
    - Walk them through a practice problem.
    - Explain the importance of solving problems correctly and the consequences for solving the problems incorrectly.
    - Explain how the students' assignments fit into "the big picture" of the assignment and/or of the objectives of the unit.

General Science

- If students have difficulty using scientific instruments:
    - Discuss, demonstrate, and review the procedures. Provide more opportunities for students to practice using the instrument..

Life Science

- If students have difficulty investigating health issues:
    - Review the issues relevant to the specific assignment.
    - Explain the reasons for investigating the particular issues and why they are important to the students.
    - Provide practice assignments.
    - Break the assignments into smaller sections and evaluate performance frequently.

Oral Presentation

- If students have difficulty using good speaking techniques:
  - Demonstrate good speaking techniques: speak in a voice loud enough to be heard, but not loud enough to be offensive.
  - Suggest that students practice before doing the actual presenting. Practicing in front of a mirror helps many presenters.
  - Discuss the importance of knowing their data so that the speech is smooth, without long pauses or frequent "uh's." Remind students to stress important facts by slowing down or speaking louder. It is also good to repeat or summarize important points.

Listening

- If students have difficulty applying active listening skills:
  - Remind students that they spend much of their time listening to what other people are saying. Ask them if they have ever tried, unsuccessfully, to remember what someone said. Explain that this happens to almost everyone. Ask why they think this happens.
  - Discuss the importance of listening carefully and attentively to conversations, discussions, and interviews. Explain that students should always have a purpose for listening and should always keep that purpose in mind while listening. Suggest that they take notes or record interviews or discussions that they need or want to remember or use later.
  - Encourage students to become familiar with the subject matter before communication begins.
  - Have students practice listening to and repeating information.
  - Present some helpful guidelines for effective listening, such as being ready to listen, focusing on the speaker, and maintaining eye contact with the speaker.

Interactive Communications

- If students have difficulty giving/following oral directions:
  - Discuss the possible consequences of not following instructions precisely.

- ☐ Review the *importance* of following oral instructions. Give appropriate scenarios when instructions are not followed or are not followed completely and correctly.
- ☐ Discuss the *relationship* between the order of instructions and the appropriate outcome. Emphasize the need to follow instructions in their proper order. Use examples where the order of instructions in a sequence is critical to the outcome of the task.
- ☐ Explain to students that one of the keys to following oral directions successfully is to take notes on the instructions before actually beginning to follow them. Doing this ensures that you will not be surprised as you work through the steps. It also gives you an opportunity to ask questions about steps you do not understand.
- ☐ Tell students that, after they have heard the directions and understand what to do, they should go back to Step 1 and follow the directions step-by-step (without skipping any steps). Remind students that it is important to follow steps in order, even if they think they already know what to do.

- ● If students have difficulty applying questioning techniques:
  - ☐ Remind students to plan in advance what they want to ask during an interview by deciding what they need to learn from the interview.
  - ☐ Explain that it is always good to have a written list of the questions to be asked, so that important questions are not omitted. Give examples of such questions.
- ● If students have difficulty conducting interviews:
  - ☐ Remind students to always either record the interview in detail or take notes, instead of relying on memory.
  - ☐ Discuss the importance of being prepared for an interview. Suggest that students always take a written list of questions to ask.
  - ☐ Remind students to thank the person being interviewed, after the interview. For additional suggestions, see the section on questioning techniques.
- ● If students have difficulty communicating with clients/customers/patients:
  - ☐ Remind students that a key to getting along with and successfully communicating with clients, customers, or patients is to treat them with the same respect and attitude you would like to receive. State that no one enjoys being talked down to or being treated unkindly or rudely. Also stress that it is very important to remember that a person's beliefs and ideas are theirs and should not be imposed upon others. Clients, customers, or patients should never be expected to change their beliefs; they should expect to have their beliefs respected, even if those beliefs are different.

  - ☐ Remind students that one of the best ways to successfully communicate with anyone is to listen thoughtfully and carefully to the other person(s). Do not assume that you know what the other person is going to say; this often leads to misunderstandings.
  - ☐ Have students give examples of how they have successfully communicated with clients, customers, or patients.

- If students have difficulty communicating with co-workers:
  - ☐ Remind students that a key to getting along with and successfully communicating with co-workers is cooperation and compromise. Have students suggest reasons why it is important that co-workers work together, as well as ways to accomplish this cooperation. (Discussion should include working as a team with a common goal, not blaming others for problems or mistakes, furnishing help or making constructive suggestions when needed, listening to suggestions from others, etc.)
  - ☐ Remind students to treat their co-workers as they would like to be treated. This helps ensure that all workers will be treated with respect.

Cognitive Activities

- If students have difficulty collecting/recording information:
  - ☐ Suggest that they first decide how and where the information will be collected and recorded. It is also very helpful to identify how the information will be used. Explain that it is always best to come prepared with pencil or pen and a preplanned sheet for recording the specific information to be collected. This preparation allows you to devote careful attention to your work.
  - ☐ Research and outline for students the steps in using any of the following "tools" for collecting/recording information: brainstorming, brainwriting, checksheets, interviewing, and surveying.

- If students have difficulty identifying critical elements/issues:
  - ☐ Instruct students to read or examine their sources carefully, noting key words and ideas.
  - ☐ Suggest they list the questions they hope to answer.

- If students have difficulty analyzing/synthesizing information:
  - ☐ Define the terms "analyze" and "synthesize." Compare and contrast their meanings.
  - ☐ Remind them that to analyze they must break the information down into all its component parts in order to understand it.
  - ☐ Remind them that to synthesize information they should put all the component parts together in a way that makes the information usable.
  - ☐ Explain that it is usually necessary to learn about complex items or things by examining their make-up or parts, such as studying body structure by examining each individual system or studying auto mechanics by examining the different automobile systems.
  - ☐ Also explain that it is sometimes necessary to then study the whole item or thing by studying how the parts work together to make the whole item work. This examination helps us identify and compare the relationships the parts have with each other.
  - ☐ Help the students understand the concepts by asking what they would do if they turned on a light and nothing happened. Lead them to discuss that they would probably first check to see if the light was plugged in or if the bulb was burned out. Plugging it in or replacing the light bulb might make the light come back on.
  - ☐ Then ask the students what they would do if the light still didn't work. Lead them to the conclusion that they should check to see if all the electricity was off. If it is, they will have to think about what they know about the whole electrical system—what are its parts. Identifying the parts of the whole will help them identify the problem.
- If students have difficulty drawing conclusions:
  - ☐ Remind students that when they conduct an experiment, perform a job task, or discuss a subject, they will often be asked to draw conclusions. Give examples of such situations.
  - ☐ Explain that, before conclusions can be drawn, students must first observe carefully what is happening and why it may be happening. Suggest that, with complex experiments, a good set of notes taken while conducting the experiment can help in drawing conclusions.
  - ☐ Have students practice drawing conclusions. When possible, choose situations appropriate for the occupation or subject (such as an actual experiment, etc.). Or, use a general situation using photographs or a videotape without the volume. Ask students to state what is happening in each picture (their conclusion). Have students support their conclusions.

- If students have difficulty identifying/developing alternatives:
    - Look at the original item/solution requiring an alternative. Identify for students the criteria in the original that must also be met by any alternative.
    - Discuss the variables that could be changed to create an alternative.
    - To identify/develop alternatives, discuss the characteristics of an alternative. Ask which factors in the problem or situation create the opportunity for more than one possible choice. Have students brainstorm alternatives to a sample problem or situation that you create.
- If students have difficulty evaluating an alternative:
    - To evaluate alternatives, suggest that students begin by listing the criteria which must be met by any alternative. Then, they can judge potential alternatives in terms of the criteria.
- If students have difficulty selecting an alternative:
    - To select alternatives, suggest that students begin by listing the criteria which must be met by any alternative. Then, they can judge potential alternatives in terms of the criteria.
- If students have difficulty devising a solution:
    - Review the critical elements/issues of the problem.
    - Review the definition of the problem.
    - Review the goals for solving the problem.
    - Discuss the alternative they have chosen to solve the problem.
- If students have difficulty creating a finished product:
    - Have them to go back to the beginning and reidentify what it was they wanted to accomplish. Have them ask themselves how they intended to accomplish this and why it has been difficult to accomplish. Have them decide if their original idea is "do-able" or if they should decide on a new final product that they will be able to complete.
    - Be sure that the students realize that one of the most important aspects of creating a finished product is the planning of the desired finished product.

- If students have difficulty transferring knowledge/training to new situations:
    - ☐ Remind the students that everything they do makes use of information that they already know. Tell them that this process of using known information often happens subconsciously. When you identify an animal as a dog, you use already known information—you know what dogs look and act like so you can recognize a dog.
    - ☐ Tell the students that when they encounter a situation or a question they aren't familiar with, they should examine it carefully to identify what they already know that will help them solve the problem or answer the question. For practice, use examples such as the following:
    - ☐ A baby you are caring for starts crying. You don't know why, but you do want to make her stop. How do you know what to try? Begin by thinking carefully about what you know about why babies cry. (hungry, diaper needs changing, wants attention, sick) Identifying what you already know gives you ideas to try that might make the baby stop crying.
    - ☐ Remind the students that when trying to solve a problem or answer a question, they should always identify what they know by thinking about similar situations, problems, or questions they have faced. This will help them with find the answer.

Job Acquisition/Development

- If students have difficulty mastering specific job task/procedure:
    - ☐ Discuss the importance of mastering specific job tasks or procedures. Explain that it is probably impossible to find a job where there isn't a task or procedure to be mastered. Remind them that future employers will be more likely to hire people who can already perform the tasks required.
    - ☐ Ask the students to share methods they have used to master specific job tasks or procedures. Discuss these methods with the class.
    - ☐ Emphasize the fact that practice makes a person proficient and proficiency makes a person confident.
    - ☐ Suggest they study each component of the procedure to determine which area is causing difficulty.
    - ☐ Review the entire procedure.

    - Team them with proficient students or professionals to practice the procedure.

- If students have difficulty practicing good work habits/attitudes:
    - Remind the students that future employers are looking for people with good work habits. Have the students list what they think are good work habits. Discuss each suggestion as it is named. Have them identify ways to improve work habits.
    - Distinguish between habits and attitudes. Demonstrate how it is possible to have good work habits, but a poor attitude.
    - Explain the role of good work habits and attitudes in obtaining and retaining employment.
    - Distinguish between good and poor work habits and attitudes. Give examples.
    - Discuss the employer's expectations of the student on the job.

- If students have difficulty dealing effectively with co-workers:
    - Remind students that a key to getting along with and successfully dealing with co-workers is cooperation and compromise. Have students suggest reasons why it is important that co-workers work together, as well as ways to accomplish this cooperation. (Discussion should include working as a team with a common goal, not blaming others for problems or mistakes, furnishing help or making constructive suggestions when needed, listening to suggestions from others, etc.)
    - Remind students to treat their co-workers as they would like to be treated. This helps ensure that all workers will be treated with respect.

- If students have difficulty dealing effectively with customers/clients/patients:
    - Remind them that one of the keys to dealing effectively with customers, clients, or patients is treating these people with the same respect and attitude you would like to receive. Remind them that no one enjoys being talked down to or being treated unkindly or rudely. Also stress that it is very important to remember that a person's beliefs and ideas are just that—theirs—and should not be imposed on other people. Clients, customers, or patients should never be expected to change their beliefs; they should expect to have their beliefs respected, even if the beliefs seem strange or different.
    - Remind them that one of the best ways to successfully deal with anyone is to listen thoughtfully and carefully to the other person or person. Don't assume that you know what the other person is going to say because doing this often leads to misunderstandings.

- Have the students discuss ways they have successfully dealt with clients, customers or patients. Briefly sum up the ways people have successfully dealt with customers, clients or patients.

INSTRUCTOR'S GUIDE

CALCULATING MEDICATION DOSAGES

1

Required Activities and Resources (R)

These are fully integrated components of this CIMC curriculum. They are usually packaged in or with the curriculum and are essential in meeting the learning objectives. To individualize this unit, use the LAP Sheet supplied in your resources.

- Reproducible handouts and Transparency Masters are included in the Instructor's Resource Package. Handouts should be copied for all students. Transparency Masters should be used to make overhead transparencies for use during instruction. A small copy of each Transparency Master appears in the student's Information Sheets.
- Non-reproducible resources are included in the student's curriculum.

Optional Activities and Resources (O)

These are suggested high-interest activities to help deliver learning objectives to students or to let students achieve objectives in an applied context. Select as many as you wish to use. Some activities use extra resources for further information about unit content. You can make them available in the classroom for in-depth study or optional activities, but their use is not required for meeting CIMC unit objectives.

FOCUS ASSIGNMENTS

Prereading

R Have the students read Handout 1, "Alternative Methods for Calculating Pediatric Dosages."

Writing

R Have the students write a short (one paragraph) answer to the question, "Which do you think would be more accurate — a dosage based on the patient's age or a dosage based on the patient's weight? Why?"

GENERAL INSTRUCTIONS

Assignment Sheets

- R Review the directions and any specific guidelines.
- R Make certain that any needed materials from the Instructor's Resource Package are available.
- R Have the students complete the Assignment Sheet. Evaluate each student's performance and provide reteaching and retesting as necessary. Have the students repeat the Assignment Sheet until they achieve mastery.
- R Complete each student's Competency Profile.
- O Have the students volunteer to read aloud the directions and any special guidelines.
- O Return the completed Assignment Sheets to the students so that they may use them for later reference if needed.

Job Sheets

- R Review the introduction and evaluation criteria for the Job Sheet. Remind the students that they should not fill in the blanks in the Yes/No columns.
- R Review and explain all general guidelines, safety cautions, and warnings.
- R Make sure that all tools, equipment, and supplies are available.
- R Demonstrate each of the procedures outlined in the Job Sheet.
- R Allow the students to practice the Job Sheet skills before skills testing. Coach, correct, and supervise as necessary.
- R Have the students complete the Job Sheet. Evaluate each student's performance and provide remediation as necessary. Have the students repeat the Job Sheet until they achieve mastery.
- R Complete each student's Competency Profile.
- R Return the completed Job Sheets to the students so that they may use them for later reference if needed.
- O Have the students volunteer to read aloud the job guidelines, cautions, and warnings.

LAP Sheets

The LAP Sheets are an optional component that can be used to individualize instruction. The following instructions should be followed only if you are using the LAP Sheets.

R Explain the specific procedures to be followed to the students before they begin using the LAP Sheet. Be sure that each student understands the procedures for using the LAP Sheet.

R If you want the student to complete any of the assignments on the LAP Sheet that are labeled optional, assign these to the student. Be sure to provide any needed resources.

PREPARATION

- Order materials to supplement unit.
- Invite a pharmacist or lawyer to discuss legal issues involved in giving medications.

  ☑ **NOTE:** Supply guest speaker with the objective sheet, information sheet, and any other component you want him/her to discuss.

- Decide how you will set up demonstration and testing schedule.
- Obtain copies of the nomogram used to compute pediatric dosages by body surface.

OBJECTIVE 1

List the units in each measurement system used in pharmacology.

O Make flash cards to teach the units in each system.

O Discuss the use of units and milliequivalents.

OBJECTIVE 2

Distinguish between characteristics of each system of measurement.

O Discuss the history of each measurement system.

O Provide different measuring devices in each system and prepare posters to explain their use.

OBJECTIVE 3 **Interpret verbal and written numbers. (Assignment Sheet 1)**

- R Discuss the importance of listening when verbal or phone orders are taken.
- R Have students complete Assignment Sheet 1.
- R Read numbers to students or record numbers being read from question 1 on the Assignment Sheet.
- R Have students read numbers aloud from question 3 on the Assignment Sheet.
- O Send a medication order to be whispered to each person (like the game of gossip), and see how it changes before the end.
- O Have students role-play repeating orders to each other correctly.
- O Write various numbers and have students read them aloud.
- R See the general instructions for all Assignment Sheets.

OBJECTIVE 4 **Calculate using basic math skills: addition, subtraction, multiplication, and division. (Assignment Sheet 2)**

- R Have students complete Assignment Sheet 2.
- R Provide an individualized study of the basic math skills for those who need extra practice.
- R See the general instructions for all Assignment Sheets.
- O Use flash cards for a quick over-all review.
- O Have groups develop basic math problems, then have the groups trade and work as separate teams to solve them.

OBJECTIVE 5 **Calculate using fractions. (Assignment Sheet 3)**

- R Have students complete Assignment Sheet 3.
- R See the general instructions for all Assignment Sheets.
- O Have students bring recipes, and change the number served. (This could also be used to practice ratio and proportions in Objective 7.)

- **O** Have students visualize parts of a pie, or use cases of soft drinks to demonstrate the concept of a whole with several pieces.

OBJECTIVE 6

Calculate using decimals. (Assignment Sheet 4)

- **R** Have students complete Assignment Sheet 4.
- **R** See the general instructions for all Assignment Sheets.
- **O** Use money to demonstrate the use of decimals in daily life in giving and receiving change.
- **O** Use your grading system to illustrate decimal numbers, if applicable.

OBJECTIVE 7

Identify the parts of a proportion statement.

- **O** Discuss how ratio and proportion is used for planning group activities, such as for parties.
- **O** Give illustrations of constant proportions in daily life.

OBJECTIVE 8

Calculate using ratios and proportions. (Assignment Sheet 5)

- **R** Have students complete Assignment Sheet 5.
- **R** See the general instructions for all Assignment Sheets.

OBJECTIVE 9

Complete rules for using apothecary Roman numerals.

- **R** Provide individualized study of Roman numerals for students who need extra practice.

OBJECTIVE 10

Read and write apothecary Roman numerals. (Assignment Sheet 6)

- **R** Have students complete Assignment Sheet 6.
- **R** See the general instructions for all Assignment Sheets.

OBJECTIVE 11

Use a chart to determine equivalents among the three systems of measurement.

OBJECTIVE 12

Give the formula for using ratio and proportion to convert medication dosages from one unit of measurement to another unit of measurement.

R Provide utensils that measure in each of the systems of measurement, and allow the students to see how the amounts relate to one another.

O Have students highlight the equivalents that you feel are the most useful in your area.

O Have students use their knowledge of household measurement to understand amounts in other systems.

OBJECTIVE 13

Convert medication dosages from one unit of measurement to another unit of measurement. (Assignment Sheet 7)

R Have students complete Assignment Sheet 7.

R See the general instructions for all Assignment Sheets.

OBJECTIVE 14

List the information necessary for dosage calculation.

R Discuss with students the alternate terms that are used to describe the three pieces of information necessary for dosage calculation. Remind the students that the meanings are still the same.

OBJECTIVE 15

Given a medication order and label information, determine the information necessary for dosage calculation. (Assignment Sheet 8)

R Have students complete Assignment Sheet 8.

R See the general instructions for all Assignment Sheets.

OBJECTIVE 16

Calculate medication dosages. (Assignment Sheet 9)

R Have students complete Assignment Sheet 9.

R See the general instructions for all Assignment Sheets.

OBJECTIVE 17

Calculate medication dosages proportionate to body weight. (Assignment Sheet 10)

- R Have students complete Assignment Sheet 10.
- R Discuss how mg/kg of body weight increases the effectiveness of medication for the individual client.
- R See the general instructions for all Assignment Sheets.
- O Have students look up common medications to find the mg/kg recommended.

OBJECTIVE 18

Calculate medication dosages for infants and children using Clark's rule. (Assignment Sheet 11)

- R Have students complete Assignment Sheet 11
- R Give students the method preferred by the local facility if Clark's rule is not used in your local facility.
- R See the general instructions for all Assignment Sheets.
- O Discuss why dosages based on weight are more accurate than those based on age (growth and development).
- O Show students a nomogram used in computing pediatric dosage according to body surface area (BSA).
- O Have students read section on BSA method of calculating dosages in *Dosage Calculations* and work exercises.

OBJECTIVE 19

List steps to take when calculated results show unusual dosage results.

- R Discuss standard procedure expected of students and how this procedure will change when working as a practical nurse.
- R Find written policies from several facilities to illustrate slight differences. Stress awareness of policies, as well as correct action.
- O Find examples of lawsuits that are based solely on an individual's failure to follow standard policy in a drug dosage situation.

OBJECTIVE 20

Using case studies, determine correct action to follow when calculated results show unusual dosage results. (Assignment Sheet 12)

R Have students complete Assignment Sheet 12.

R See the general instructions for all Assignment Sheets.

EVALUATION

Pretest

- Use the unit Written Test for *both* the pretest and posttest. Give the students the pretest before they begin the unit.
- You may wish to use the CIMC publication *Measuring Learning and Competency Gains: The Pretest/Posttest Approach* for instructions and suggestions on giving pretests and using the results. Information for ordering this material is included in the optional resources section.
- Use pretest results to guide individual students in progressing through the unit, doing enrichment work, or moving to the next unit.

Focus Assignment

- Use an informal evaluation of the focus assignments as a diagnostic tool for determining if any students need extra help in reading comprehension or writing skills. Refer these students to their English instructor, Learning Resource Center, or Educational Enhancement Center.

Assignment Sheet

- Evaluate students on Assignment Sheet activities. Students must repeat an Assignment Sheet until they have mastered the activity.
- Complete each student's Competency Profile.

Skill Test

- Explain to the students that they will be asked to demonstrate the procedures on the Job Sheets as a skills test.
- Describe the rating scale used on the skills test.
- Reteach and retest as necessary.

- Complete each student's Competency Profile.

Posttest

- After they have completed the unit, give students the Written Test again.
- Explain to the students that they will be asked to demonstrate on the Written Test actions listed in the specific objectives.
- You may wish to use the CIMC publication *Measuring Learning and Competency Gains: The Pretest/Posttest Approach* for instructions and suggestions on giving posttests and using the results. Information for ordering this material is included in the optional resources section.
- Reteach and retest as necessary to meet individual student needs and state standards for student learning and competency gains.
- Complete the appropriate sections of the Competency Profiles.
- Review individual and group performance to evaluate teaching effectiveness. Adjust scope, sequence, or instructional methods for additional lessons as required.

REQUIRED RESOURCES

The items marked with an asterisk are included in the Instructor's Resource Package.

Publications

- "Alternative Methods for Calculating Pediatric Dosages." Handout 1.*
- "Basic Math Skills." Handout 2.*
- "Calculating With Fractions." Handout 3.*
- "Calculating With Decimals." Handout 4.*

OPTIONAL RESOURCES

Publications

- *Measuring Learning and Competency Gains: The Pretest/Posttest Approach.* Stillwater, OK: CIMC, Oklahoma Department of Vocational and Technical Education, 1992. For ordering information call 800-522-5810.

- Pickar, Gloria. *Dosage Calculations*, 4th ed. Albany, New York: Delmar Publishers Inc., 1993.

Videos

- *ModuMath: Arithmetic.* Lesson 2.8: "Ratio and Proportion". Wisconsin Foundation for Vocational, Technical and Adult Education, Inc., 2564 Branch Street, Middleton, WI 53562, 800-821-6313.

UNIT REFERENCES

- Dawe, Renee. *Math and Dosage Calculations for Health Occupations.* New York: Glencoe, 1993.
- Pickar, Gloria. *Dosage Calculations*, 4th ed. Albany, New York: Delmar Publishers Inc., 1993.

ANSWERS

CALCULATING MEDICATION DOSAGES

1

ASSIGNMENT SHEETS

OBJECTIVE 3

Assignment Sheet 1

1. a. 43
   b. 8429
   c. 35,000
   d. $17\,{}^{3}/_{5}$
   e. $3\,{}^{5}/_{34}$
   f. ${}^{11}/_{150}$
   g. 3.055
   h. 0.0592
   i. 314.14
   j. 3,680,000.72

2. a. 843
   b. 34892
   c. 660,000
   d. $22\,{}^{1}/_{8}$
   e. $1\,{}^{1}/_{125}$
   f. ${}^{51}/_{58}$
   g. 9.012
   h. 0.0138
   i. 101.05
   j. 1,000,005.33

3. a. Eight hundred forty-three
   b. Thirty-four thousand eight hundred ninety-two
   c. Six hundred sixty thousand
   d. Twenty-two and one eighth
   e. One and one one hundred twenty-fifths
   f. Fifty one fifty-eighths
   g. Nine and twelve thousandths
   h. One hundred thirty eight ten-thousandths
   i. One hundred one and five hundredths
   j. One million five and thirty-three hundredths

4. a. Nine hundred thirty-two
   b. Three hundred forty thousand twenty-nine
   c. Twenty-nine and one half
   d. Fifty-eight thousandths
   e. Two million sixteen thousand two hundred three and ninety-two hundredths.

OBJECTIVE 4

Assignment Sheet 2

1. 13
2. 50
3. 642
4. 5124
5. 196
6. 771
7. 966
8. 1,302,002
9. 6
10. 35
11. 137
12. 814
13. 681
14. 5440
15. 23137
16. 280,000

17. 24
18. 154
19. 403
20. 5544
21. 505
22. 22620
23. 97180
24. 572,413
25. 7
26. 8
27. 5
28. 43
29. 24
30. 119
31. 8
32. 548

OBJECTIVE 5

Assignment Sheet 3

1. a. 1/4
   b. 1/3
   c. 3/4
   d. 4/11
   e. 3/20
   f. $2\ ^{11}/_{20}$

2. 3/4
3. 7/9
4. 19/24
5. 23/26
6. $1\ ^{1}/_{12}$
7. $1\ ^{11}/_{63}$
8. $4\ ^{17}/_{20}$
9. $6\ ^{7}/_{12}$
10. 1/30
11. 2/9
12. 1/2
13. 3/8
14. 7/24
15. 3/4
16. $12\ ^{15}/_{26}$
17. 57/100

18. 3/28
19. 30/39
20. 4/9
21. 7/15
22. 1
23. 3/5
24. $3\ ^{3}/_{5}$
25. 2 ½
26. 1/2
27. 3/8
28. 1 ¼
29. 9/10
30. $4\ ^{4}/_{9}$
31. 32
32. $9\ ^{2}/_{3}$
33. $19\ ^{4}/_{5}$

OBJECTIVE 6

Assignment Sheet 4

1. 2.9
2. 1.09
3. 1.51
4. 9.606
5. 0.982
6. 10.745
7. 2.00172
8. 94.274
9. 2.4
10. 21.75
11. 17.799
12. 0.012
13. 99.999
14. 0.46
15. 0.021
16. 0.0994

17. 6.6
18. 0.95
19. 0.003
20. 0.594
21. 0.748
22. 0.1449
23. 0.12099
24. 20.61687
25. 40
26. 20
27. 7.2
28. 8
29. 3
30. 0.42
31. 0.93125
32. 0.23

OBJECTIVE 8

Assignment Sheet 5

1. 3 ½ pt
2. 5 ft
3. 96.8 lb
4. 4 ½ qt
5. 1 ¼ hr

6. a. 30 minutes
   b. 4 ½ miles

7. a. 75 grams
   b. 21.6 grams

OBJECTIVE 10

Assignment Sheet 6

1. 3
2. 2
3. 4
4. 13
5. 14
6. 1 1/2
7. iiss
8. vi
9. ix
10. xii

11. viiiss
12. xiss
13. grain two
14. drams one and one-half
15. sixty minims
16. grains seven and one-half
17. three and one-fourth ounces

18. gr iii
19. m xv
20. 60 gtt
21. oz ivss
22. $^{1}/_{150}$ gr
23. dr iv
24. 2 ¼ oz
25. 20 ½ gr

OBJECTIVE 13

Assignment Sheet 7

1. 30
2. 7 ½
3. 9
4. 2 ½
5. 80
6. 14
7. 2 ½
8. 3 ¾
9. 22 ½
10. 10
11. 2
12. 1.3 or ⅓
13. 10
14. 2.5 or 2 ½
15. 90
16. 600
17. 120
18. 600
19. 3.3 or 3 ⅓
20. 0.6
21. 15 milligrams
22. 10 milliliters

23. 2
24. 1 ½
25. 2
26. 2
27. 1/2
28. 2
29. 1 ½
30. 1/4
31. 2
32. 132

33. 0.25
34. 0.325
35. 2
36. 0.05
37. 0.0001
38. 400
39. 1400
40. 25000
41. 30
42. 1

OBJECTIVE 15

Assignment Sheet 8

1. 30 mg
15 mg
1 tablet

2. 200 mg
400 mg
1 tablet

3. 25 mg
50 mg
1 cc

4. 400,000 units
600,000 units
1.2 cc

5. 20 meq
   20 meq
   1 tablet

OBJECTIVE 16

Assignment Sheet 9

1. 1 tab
2. 1 tab
3. 1 cc
4. 1 ½ tab
5. 2 tab
6. 1/2 tab
7. 2 ½ cc
8. 1 ½ cc
9. 1/2 cc
10. 2 tab
11. 1/2 cc
12. 1.3 cc

OBJECTIVE 17

Assignment Sheet 10

	Daily	Individual
1.	10 mg	5 mg
2.	375 mg	125 mg
3.	105 G or 10500 mg	26.25 G or 26250 mg
4.	1000 mg	250 mg
5.	120 G	40 G

OBJECTIVE 18

Assignment Sheet 11

1. 30 mg
2. 2.66 mg
3. 5/6 or 0.83 gr or 49.8 mg (50 mg)
4. 14.66 or $14\,{}^{2}/_{3}$ mg
5. 0.51 mg

OBJECTIVE 20

Assignment Sheet 12

Case Study 1

1. Double check the calculation
2. Supervising nurse
3. Call physician to verify order and confirm the reason for unusual dosage

Case Study 2

Decide whether or not to give the medication to the client. If medication is not given, inform supervising nurse.

WRITTEN TEST

OBJECTIVE 1

☑ **NOTE:** Answers can be listed in any order, but must be under the appropriate heading.

- Metric system
    - ☐ distance
        - ▸ centimeter (cm)
        - ▸ meter (M)
    - ☐ volume
        - ▸ cubic centimeter (cc)
        - ▸ milliliter (ml)
        - ▸ gram (G)
        - ▸ liter (L)
    - ☐ weight
        - ▸ microgram (mcg)
        - ▸ milligram (mg)
        - ▸ kilogram (kg)
- Apothecary system
    - ☐ volume
        - ▸ minim (m, m_x)
        - ▸ fluidram (fl dr)
        - ▸ fluidounce (fl oz)
        - ▸ pint (pt)
        - ▸ quart (qt)

    - ☐ weight
        - ▸ grain (gr)
        - ▸ dram (dr)
        - ▸ ounce (oz)

- Household system

    - ☐ distance
        - ▸ inch (in)
        - ▸ foot (ft)
        - ▸ mile (mi)

    - ☐ volume
        - ▸ drop (gtt)
        - ▸ teaspoon (t, tsp)
        - ▸ tablespoon (T, tbsp)
        - ▸ cup (cu)
        - ▸ pint (pt)
        - ▸ quart (qt)
        - ▸ gallon (gal)

    - ☐ weight
        - ▸ ounce (oz)
        - ▸ pound (lb)

OBJECTIVE 2

1. H
2. A
3. A
4. M
5. H
6. A

OBJECTIVE 3 **Evaluated on Assignment Sheet 1**

OBJECTIVE 4 **Evaluated on Assignment Sheet 2**

OBJECTIVE 5 **Evaluated on Assignment Sheet 3**

OBJECTIVE 6 **Evaluated on Assignment Sheet 4**

OBJECTIVE 7

1. 1 yard
2. 12 yards
3. 3 feet
4. unknown feet
5. 3 feet, 12 yards
6. 1 yard, unknown feet

OBJECTIVE 8

Evaluated on Assignment Sheet 5

OBJECTIVE 9

1. 1/2
2. one number
3. left, right
4. add the two numbers together
5. subtract the smaller number from the larger one
6. subtract, add
7. three
8. 15
9. after, before

OBJECTIVE 10

Evaluated on Assignment Sheet 6

OBJECTIVE 11

1. 1
2. 1
3. 1
4. 1
5. 0.455
6. 0.5
7. 1
8. 15
9. 250

10 4

11. viiss
12. 0.4
13. xv
14. 1
15. 2.2

OBJECTIVE 12

known unit of measure	:	known equivalent	::	desired unit of measure	:	unknown equivalent

OBJECTIVE 13

Evaluated on Assignment Sheet 7

OBJECTIVE 14

- dosage ordered
- dose on hand
- quantity on hand

OBJECTIVE 15

Evaluated on Assignment Sheet 8

OBJECTIVE 16

Evaluated on Assignment Sheet 9

OBJECTIVE 17

Evaluated on Assignment Sheet 10

OBJECTIVE 18

Evaluated on Assignment Sheet 11

OBJECTIVE 19

1. Double-check your calculations.
2. Ask your supervising nurse to check your calculations.
3. Ask the pharmacist to confirm that the calculation is correct and that the resultant amount is within normal dosages for that particular medication.
4. Contact the physician to verify the order and confirm the reason for the unusual dosage.
5. Decide whether to give the medication based on your own judgement. If you decide not to give the medication, you must inform your supervising nurse, who must make a judgement whether or not to give the medication.

OBJECTIVE 20

Evaluated on Assignment Sheet 12

CIMC
TEST CODE SHEET

VOCATIONAL PROGRAM (BOOK TITLE) Pharmacology

UNIT NUMBER AND TITLE 1 - Calculating Medication Dosages

TOTAL NUMBER OF TEST QUESTIONS 48

TOTAL NUMBER OF BASIC SKILL QUESTIONS 22

OBJECTIVE NUMBER	TEST QUESTION NUMBER(S)	BASIC SKILL CODE(S)
1	1-3	X
2	1-6	X
3	Evaluated on AS 1	
4	Evaluated on AS 2	
5	Evaluated on AS 3	
6	Evaluated on AS 4	
7	1-6	M
8	1-9	X
10	Evaluated on AS 6	
11	1-15	M
12	1	M
13	Evaluated on AS 7	
14	1-3	X
15	Evaluated on AS 8	
16	Evaluated on AS 9	
17	Evaluated on AS 10	
18	Evaluated on AS 11	
19	1-5	X
20	Evaluated on AS 12	

INSTRUCTOR'S GUIDE

DOCUMENTING MEDICATIONS

2

Required Activities and Resources (R)

These are fully integrated components of this CIMC curriculum. They are usually packaged in or with the curriculum and are essential in meeting the learning objectives. To individualize this unit, use the LAP Sheet supplied in your resources.

- Reproducible handouts and Transparency Masters are included in the Instructor's Resource Package. Handouts should be copied for all students. Transparency Masters should be used to make overhead transparencies for use during instruction. A small copy of each Transparency Master appears in the student's Information Sheets.
- Non-reproducible resources are included in the student's curriculum.

Optional Activities and Resources (O)

These are suggested high-interest activities to help deliver learning objectives to students or to let students achieve objectives in an applied context. Select as many as you wish to use. Some activities use extra resources for further information about unit content. You can make them available in the classroom for in-depth study or optional activities, but their use is not required for meeting CIMC unit objectives.

FOCUS ASSIGNMENTS

Prereading

R Have the students read the Handout, "Documentation Guidelines."

Writing

R Have the students write a short (one paragraph to one page) discussion of what could happen if they do not follow these guidelines.

GENERAL INSTRUCTIONS

Assignment Sheets

R Review the directions and any specific guidelines.

R Make certain that any needed materials from the Instructor's Resource Package are available.

R Have the students complete the Assignment Sheet. Evaluate each student's performance and provide reteaching and retesting as necessary. Have the students repeat the Assignment Sheet until they achieve mastery.

R Complete each student's Competency Profile.

O Have the students volunteer to read aloud the directions and any special guidelines.

O Return the completed Assignment Sheets to the students so that they may use them for later reference if needed.

Job Sheets

R Review the introduction and evaluation criteria for the Job Sheet. Remind the students that they should not fill in the blanks in the Yes/No columns.

R Review and explain all general guidelines, safety cautions, and warnings.

R Make sure that all tools, equipment, and supplies are available.

R Demonstrate each of the procedures outlined in the Job Sheet.

R Allow the students to practice the Job Sheet skills before skills testing. Coach, correct, and supervise as necessary.

R Have the students complete the Job Sheet. Evaluate each student's performance and provide remediation as necessary. Have the students repeat the Job Sheet until they achieve mastery.

R Complete each student's Competency Profile.

R Return the completed Job Sheets to the students so that they may use them for later reference if needed.

O Have the students volunteer to read aloud the job guidelines, cautions, and warnings.

LAP Sheets

The LAP Sheets are an optional component that can be used to individualize instruction. The following instructions should be followed only if you are using the LAP Sheets.

R Explain the specific procedures to be followed to the students before they begin using the LAP Sheet. Be sure that each student understands the procedures for using the LAP Sheet.

R If you want the student to complete any of the assignments on the LAP Sheet that are labeled optional, assign these to the student. Be sure to provide any needed resources.

OBJECTIVE 1 **Match common abbreviations and symbols used in the documentation of the administration of medications to their correct meanings.**

R Review the symbols familiar to students.

R Provide examples of orders to show how abbreviations are used.

R Discuss routine times for administration of medications and how they may differ.

EXAMPLE: One facility may administer medications ordered bid at 9:00 am and 5:00 pm, while another administers bid orders at 8:00 am and 8:00 pm.

O Give examples of unclear use of abbreviations.

O Play games (concentration, flash cards) to help reinforce the use of abbreviations.

OBJECTIVE 2 **Interpret written medication orders. (Assignment Sheet 1)**

R See the general instructions for all Assignment Sheets.

OBJECTIVE 3 **Identify the documentation necessary when obtaining a medication.**

R Discuss the various methods used to order medications.

R Discuss the different types of pharmacies that facilities use to obtain medications.

R Discuss the importance of signing for controlled substances once you have received them.

OBJECTIVE 4

Identify the documentation necessary when giving a medication.

R Briefly discuss the use of the five rights for all routes of administration (the five rights are covered in more detail in unit 4: "Administering Medications.")

R Discuss why medications would be held in your local facility.

R Discuss the implications that would follow if the reason for a hold on medication is not charted.

O Have students work in groups to determine the variables of each route and what would need to be documented.

O Have students design a form that they think would best meet the nurse's needs when documenting the administration of medications. Provide opportunities for groups to critique these.

O Provide students with forms from local facilities. Have them record the medications of one patient for a day if all were given as ordered.

O Give each student a fictitious patient who is taking various medications. Have the students write down the patient teaching that would be necessary for their patient.

O Have students role play situations of patient teaching.

OBJECTIVE 5

Match systems of giving medications with their definitions.

R Discuss each of the common types of physician's orders and the practical nurse's role and responsibility for each one.

R Discuss why the recording of the route in stat and prn (stat and one-time orders) differs.

O Have students identify patients they have observed that would have been charted for prn medications. Have them write how they would have documented this information.

OBJECTIVE 6

Document administration of medication. (Assignment Sheet 2)

R Provide copies of a documentation form from a local facility.

R See the general instructions for all Assignment Sheets.

OBJECTIVE 7

Identify steps necessary to transcribe medication orders.

R Discuss legibility of transcription.

R Discuss the essential parts of the medication order.

R Review the format of the local nursing Kardex, as well as the form of medication card/system used.

O Have students copy or write orders without signing their names to the order. Have the students pass the orders in, and then pass the orders back out in a random order. Allow the students to determine how many can be read by other students clearly.

O Provide the students with orders written by local physicians and practice interpretation.

O Have students evaluate two systems of documentation. Allow them to choose the system they think would be easier to maintain and have them explain why they believe this.

O Role-play situations between nurse and doctor or nurse and pharmacist in which the nurse must clarify orders.

OBJECTIVE 8

Transcribe medication orders. (Assignment Sheet 3)

R Provide a physician's medication order that includes p.o., subq, IM, ID, suppository, prn, routine, stat, and one-time orders.

R See the general instructions for all Assignment Sheets.

OBJECTIVE 9

Identify assessment data to be included in a medication history.

R Demonstrate the use of the format your local facility uses to document a medication history.

O Have students consider the information they would give for their own medication history.

O Role-play situations that could occur when taking a medication history (interviewing family member, patient who tells about history for the last 20 years, etc.)

O Show the students other medication history forms and explain how to use them.

OBJECTIVE 10

Develop questions to obtain patient assessment data included in a medication history. (Assignment Sheet 4)

R Have students role play or interview patients for medical history.

R See the general instructions for all Assignment Sheets.

OBJECTIVE 11

Identify documentation requirements for verbal and telephone orders.

R Give details of how verbal and telephone orders are used.

R Discuss how verbal and telephone orders relate to students. Make it clear whether this is or is not allowed, and be specific in situation for students.

R Discuss how and when students should refuse a verbal or telephone order.

OBJECTIVE 12

Document verbal and telephone orders. (Assignment Sheet 5)

R Obtain a physician's order sheet for student use.

R Read orders aloud for students or provide a tape of verbal orders (see Answers section of Instructor's Guide, objective 12.)

R See the general instructions for all Assignment Sheets.

OBJECTIVE 13

Identify documentation requirements for storage, use, and waste of controlled substances.

R Discuss why wastage of controlled substances occurs.

R Discuss how the system provides for double checking to avoid illegal use of controlled substances.

O Provide sample forms used in local facilities and explain their use.

OBJECTIVE 14

Document the storage, use, and waste of controlled substances. (Assignment Sheet 6)

R See the general instructions for all Assignment Sheets.

OBJECTIVE 15

Count controlled substances. (Job Sheet)

R Demonstrate procedure for counting controlled substances.

R See the general instructions for all Job Sheets.

O Role-play shift changes.

EVALUATION

Pretest

- Use the unit Written Test for *both* the pretest and posttest. Give the students the pretest before they begin the unit.

- You may wish to use the CIMC publication *Measuring Learning and Competency Gains: The Pretest/Posttest Approach* for instructions and suggestions on giving pretests and using the results. Information for ordering this material is included in the optional resources section.

- Use pretest results to guide individual students in progressing through the unit, doing enrichment work, or moving to the next unit.

Focus Assignment

- Use an informal evaluation of the focus assignments as a diagnostic tool for determining if any students need extra help in reading comprehension or writing skills. Refer these students to their English instructor, Learning Resource Center, or Educational Enhancement Center.

Assignment Sheet

- Evaluate students on Assignment Sheet activities. Students must repeat an Assignment Sheet until they have mastered the activity.

- Complete each student's Competency Profile.

Skill Test

- Explain to the students that they will be asked to demonstrate the procedures on the Job Sheets as a skills test.

- Describe the rating scale used on the skills test.

- Reteach and retest as necessary.

- Complete each student's Competency Profile.

Posttest

- After they have completed the unit, give students the Written Test again.
- Explain to the students that they will be asked to demonstrate on the Written Test actions listed in the specific objectives.
- You may wish to use the CIMC publication *Measuring Learning and Competency Gains: The Pretest/Posttest Approach* for instructions and suggestions on giving posttests and using the results. Information for ordering this material is included in the optional resources section.
- Reteach and retest as necessary to meet individual student needs and state standards for student learning and competency gains.
- Complete the appropriate sections of the Competency Profiles.
- Review individual and group performance to evaluate teaching effectiveness. Adjust scope, sequence, or instructional methods for additional lessons as required.

REQUIRED RESOURCES

The items marked with an asterisk are included in the Instructor's Resource Package.

Publications

- "Documentation Guidelines." Handout*

OPTIONAL RESOURCES

Publications

- *Measuring Learning and Competency Gains: The Pretest/Posttest Approach.* Stillwater, OK: CIMC, Oklahoma Department of Vocational and Technical Education, 1992. For ordering information call 800-522-5810.
- Christensen, Barbara, and Elaine Kockrow. *Foundations of Nursing.* St. Louis: Mosby Year Book, 1991.
- Iyer, Patricia. "Six More Charting Rules to Keep You Legally Safe." *Nursing 91*, July 1991, p. 34-39.

- Iyer, Patricia. "Thirteen Charting Rules to Keep You Legally Safe." *Nursing 91*, June 1991, p. 40-43.

UNIT REFERENCES

- Christensen, Barbara, and Elaine Kockrow. *Foundations of Nursing*. St. Louis: Mosby Year Book, 1991.
- Iyer, Patricia. "Six More Charting Rules to Keep You Legally Safe." *Nursing 91*, July 1991, p. 34-39.
- Iyer, Patricia. "Thirteen Charting Rules to Keep You Legally Safe." *Nursing 91*, June 1991, p. 40-43.

ANSWERS

DOCUMENTING MEDICATIONS

2

ASSIGNMENT SHEETS

OBJECTIVE 2

Assignment Sheet 1

1. Digitoxin 0.15 milligrams by mouth every day
2. Dalmane 30 milligrams by mouth at hour of sleep as needed for sleep
3. Regular Humulin 28 units every morning
4. Codeine grains 1/4 intramuscular every 6 hours as needed
5. Nitroglycerine grains 1/150 sublingual every 5 minutes up to 3 times as needed for chest pain

OBJECTIVE 6

Assignment Sheet 2

Answers will vary.

OBJECTIVE 8

Assignment Sheet 3

Answers will vary.

OBJECTIVE 10

Assignment Sheet 4

Answers will vary.

OBJECTIVE 12

Assignment Sheet 5

8/13	9:00 p.m.	1.	Keflex 500 mg po qid for 10 days begin now
8/13	11:15 p.m.	2.	Haldol 2 mg im stat repeat times 1 if needed
8/14	6:00 a.m.	3.	Hold a.m. doses of digoxin this a.m.

8/15	5:30 a.m.	4.	Increase NPH insulin to 35 units today
8/15	12:45 p.m.	5.	Vistaril 50 mg IM stat and q4h prn for nausea
8/16	4:30 p.m.	6.	Benadryl 25 mg po tid prn itching

OBJECTIVE 14

Assignment Sheet 6

To the satisfaction of instructor. Note wastage necessary with morphine. Standard dose 10 mg, 4 mg will be wasted.

WRITTEN TEST

OBJECTIVE 1

1. G
2. A
3. E
4. J
5. H
6. B
7. I
8. F
9. D
10. C

OBJECTIVE 2

Evaluated on Assignment Sheet 1.

OBJECTIVE 3

1, 3, 4, 6, 8, 9, 11, 12

OBJECTIVE 4

1, 3, 4, 6, 8

OBJECTIVE 5

1. E
2. D
3. G
4. C
5. A
6. F

OBJECTIVE 6

Evaluated on Assignment Sheet 2.

OBJECTIVE 7

1, 3, 4, 7, 8, 10, 12

OBJECTIVE 8	**Evaluated on Assignment Sheet 3.**
OBJECTIVE 9	2, 5, 6, 8
OBJECTIVE 10	**Evaluated on Assignment Sheet 4.**
OBJECTIVE 11	1, 3, 4, 7, 8
OBJECTIVE 12	**Evaluated on Assignment Sheet 5.**
OBJECTIVE 13	1, 2, 3, 6, 7, 9, 11, 12
OBJECTIVE 14	**Evaluated on Assignment Sheet 6.**
OBJECTIVE 15	**Evaluated on Job Sheet 1.**

CIMC
TEST CODE SHEET

VOCATIONAL PROGRAM (BOOK TITLE) Pharmacology

UNIT NUMBER AND TITLE 2 - Documenting Medications

TOTAL NUMBER OF TEST QUESTIONS 76

TOTAL NUMBER OF BASIC SKILL QUESTIONS 0

OBJECTIVE NUMBER	TEST QUESTION NUMBER(S)	BASIC SKILL CODE(S)
1	1-10	X
2	Evaluated on AS 1	
3	1-13	X
4	1-8	X
5	1-6	X
6	Evaluated on AS 2	
7	1-11	X
8	Evaluated on AS 3	
9	1-8	X
10	Evaluated on AS 4	
11	1-8	X
12	Evaluated on AS 5	
13	1-12	X
14	Evaluated on AS 6	
15	Evaluated on the JS	

INSTRUCTOR'S GUIDE

IDENTIFYING CLASSIFICATION AND EFFECTS OF MEDICATIONS

3

Required Activities and Resources (R)

These are fully integrated components of this CIMC curriculum. They are usually packaged in or with the curriculum and are essential in meeting the learning objectives. To individualize this unit, use the LAP Sheet supplied in your resources.

- Reproducible handouts and Transparency Masters are included in the Instructor's Resource Package. Handouts should be copied for all students. Transparency Masters should be used to make overhead transparencies for use during instruction. A small copy of each Transparency Master appears in the student's Information Sheets.
- Non-reproducible resources are included in the student's curriculum.

Optional Activities and Resources (O)

These are suggested high-interest activities to help deliver learning objectives to students or to let students achieve objectives in an applied context. Select as many as you wish to use. Some activities use extra resources for further information about unit content. You can make them available in the classroom for in-depth study or optional activities, but their use is not required for meeting CIMC unit objectives.

FOCUS ASSIGNMENTS

Prereading

R Have students use a drug reference book to research any drug.

Writing

R Have students write a short (one paragraph to one page) description of how the drug works, what drugs it is incompatible with, and what would happen if a person taking this drug took an incompatible drug.

GENERAL INSTRUCTIONS

Assignment Sheets

R Review the directions and any specific guidelines.

R Make certain that any needed materials from the Instructor's Resource Package are available.

R Have the students complete the Assignment Sheet. Evaluate each student's performance and provide reteaching and retesting as necessary. Have the students repeat the Assignment Sheet until they achieve mastery.

R Complete each student's Competency Profile.

O Have the students volunteer to read aloud the directions and any special guidelines.

O Return the completed Assignment Sheets to the students so that they may use them for later reference if needed.

Job Sheets

R Review the introduction and evaluation criteria for the Job Sheet. Remind the students that they should not fill in the blanks in the Yes/No columns.

R Review and explain all general guidelines, safety cautions, and warnings.

R Make sure that all tools, equipment, and supplies are available.

R Demonstrate each of the procedures outlined in the Job Sheet.

R Allow the students to practice the Job Sheet skills before skills testing. Coach, correct, and supervise as necessary.

R Have the students complete the Job Sheet. Evaluate each student's performance and provide remediation as necessary. Have the students repeat the Job Sheet until they achieve mastery.

R Complete each student's Competency Profile.

R Return the completed Job Sheets to the students so that they may use them for later reference if needed.

O Have the students volunteer to read aloud the job guidelines, cautions, and warnings.

LAP Sheets

The LAP Sheets are an optional component that can be used to individualize instruction. The following instructions should be followed only if you are using the LAP Sheets.

R Explain the specific procedures to be followed to the students before they begin using the LAP Sheet. Be sure that each student understands the procedures for using the LAP Sheet.

R If you want the student to complete any of the assignments on the LAP Sheet that are labeled optional, assign these to the student. Be sure to provide any needed resources.

OBJECTIVE 1

Identify ways drugs are classified.

R Give examples of drugs and their classifications.

OBJECTIVE 2

Identify general purposes for which medications are given to patients.

R Have students provide examples of a drug used for each purpose.

O Discuss new drugs being developed and the research involved in seeking a drug for a particular purpose.

O Let students identify the purpose of unfamiliar drugs if given specific purposes.

O Discuss diseases from the past that are controlled by drugs today, such as polio, measles, mumps, smallpox, etc.

OBJECTIVE 3

Differentiate between systemic and local effects of medications.

R Provide examples of local and systemic effects.

R Discuss relationship between systemic effects, therapeutic effects, and side effects.

R Discuss the drugs which are given in the local facility using load (initial) doses of medication.

O Have students look on patients' charts for blood levels of medications such as digoxin or theophylline. Discussion may also include discussion of PT and PTT for anticoagulant therapy and therapeutic range evidenced by other tests.

- O Have students observe the effects of initiating a new medication on a patient for a period of several days. Records may be kept to indicate using observable changes when the therapeutic effects of the medication began. The students can observe the effects of blood level in a shorter span of time through close observation of patients being medicated for pain. Relate the differences in medications by purpose and effects.

OBJECTIVE 4 **Identify therapeutic effects of the most common classes of medications.**

OBJECTIVE 5 **Identify side effects of the common classifications of medications.**

OBJECTIVE 6 **Identify contraindications of the common classifications of medications.**

OBJECTIVE 7 **Identify common drugs within each classification of medication.**

OBJECTIVE 8 **Identify the nursing actions for common classifications of medications.**

- R Review the information chart.
- R Provide practice drills in the major categories.
- O Use information in the chart to play trivia games.

OBJECTIVE 9 **Identify drug factors and patient assessment data which influence selection and administration of medication.**

- O Use patients in the clinical area as individual case studies for identification of factors which influence medication selection.
- O Give examples of different drugs that might be given to patients with the same indications but different patient assessment data.
- O Have students work in small groups to choose medications for a patient. Provide information about particular needs and limitations.

OBJECTIVE 10 **Use references to obtain information about drugs. (Assignment Sheet 1)**

- R Follow general instructions for all Assignment Sheets.

R Provide reference material such as *Physician's Desk Reference* or *Nursing Drug Reference.* Stress the importance of using current references.

O Give the name of drugs used in your local facilities.

O Have teams cross quiz each other on generic and trade names.

O Discuss unusual additives that may make differences in the listing of a generic drug.

EXAMPLE: Hydroxyzine pamoate—hydroxyzine hydrochloride.

OBJECTIVE 11

Use references to develop patient instruction for medication. (Assignment Sheet 2)

R Follow general instructions for all Assignment Sheets.

R Review patient and drug factors to be considered.

O Have students role play delivery of information.

EVALUATION

Pretest

- Use the unit Written Test for *both* the pretest and posttest. Give the students the pretest before they begin the unit.
- You may wish to use the CIMC publication *Measuring Learning and Competency Gains: The Pretest/Posttest Approach* for instructions and suggestions on giving pretests and using the results. Information for ordering this material is included in the optional resources section.
- Use pretest results to guide individual students in progressing through the unit, doing enrichment work, or moving to the next unit.

Focus Assignment

- Use an informal evaluation of the focus assignments as a diagnostic tool for determining if any students need extra help in reading comprehension or writing skills. Refer these students to their English instructor, Learning Resource Center, or Educational Enhancement Center.

Assignment Sheet

- Evaluate students on Assignment Sheet activities. Students must repeat an Assignment Sheet until they have mastered the activity.
- Complete each student's Competency Profile.

Skill Test

- Explain to the students that they will be asked to demonstrate the procedures on the Job Sheets as a skills test.
- Describe the rating scale used on the skills test.
- Reteach and retest as necessary.
- Complete each student's Competency Profile.

Posttest

- After they have completed the unit, give students the Written Test again.
- Explain to the students that they will be asked to demonstrate on the Written Test actions listed in the specific objectives.
- You may wish to use the CIMC publication *Measuring Learning and Competency Gains: The Pretest/Posttest Approach* for instructions and suggestions on giving posttests and using the results. Information for ordering this material is included in the optional resources section.
- Reteach and retest as necessary to meet individual student needs and state standards for student learning and competency gains.
- Complete the appropriate sections of the Competency Profiles.
- Review individual and group performance to evaluate teaching effectiveness. Adjust scope, sequence, or instructional methods for additional lessons as required.

REQUIRED RESOURCES

The items marked with an asterisk are included in the Instructor's Resource Package.

Publications

- One of the following (or a comparable resource):
    - Albanese, Joseph, and Patricia Nutz. *Mosby's 1995 Nursing Drug Cards.* St. Louis: Mosby-Year Book, 1995.
    - *Physician's Desk Reference* (47th ed). Montvale, New Jersey: Medical Economics Data, 1993.
    - Skidmore-Roth, Linda. *Mosby's Nursing Drug Reference.* St. Louis: Mosby-Year Book, 1994.

OPTIONAL RESOURCES

Publications

- *Measuring Learning and Competency Gains: The Pretest/Posttest Approach.* Stillwater, Oklahoma: CIMC, Oklahoma Department of Vocational and Technical Education, 1992. For ordering information call 800-522-5810.

UNIT REFERENCES

- *Physician's Desk Reference* (47th ed). Montvale, New Jersey: Medical Economics Data, 1993.
- Skidmore-Roth, Linda. *Mosby's Nursing Drug Reference.* St. Louis: Mosby Year-Book, 1994.

ANSWERS

IDENTIFYING CLASSIFICATION AND EFFECTS OF MEDICATIONS

3

ASSIGNMENT SHEETS

OBJECTIVE 10

Assignment Sheet 1

1. a. aspirin
   b. lidocaine
   c. morphine
   d. pentobarbital
   e. phenytoin sodium
   f. cephalothin sodium
   g. nitrofurantoin
   h. ranitidine
   i. aminophylline
   j. lindane

2. ☑ **NOTE:** Other names may be given; check against student's resources.

   a. Zovirax®
   b. Dopamine HCl®, Intropin®
   c. Loniten®, Minodyl®, Minoxidil®, Rogaine®
   d. Demerol®, Meperidine HCl®
   e. Diazepam®, Diazepam Intensol®, Valium®, Valrelease®, Vazepam®, Zetran®
   f. Carfin®, Coumadin®, Panwarfin®, Sofarin®, Warfarin Sodium®
   g. Silvadene®, SSD®, SSD AF®
   h. Serpalan®
   i. Tagamet®
   j. Naprosyn®, Anaprox®

3. The patient should not take acetomeniphen unless approved by his physician.

4. Antibiotics will cause decreased action of oral contraceptives.

OBJECTIVE 11

Assignment Sheet 2

Evaluated to the satisfaction of the instructor. Answers should include:

- Name of medication
- Schedule/instruction for administration of medication
- Side effects to be reported
- Follow-up visits to doctor's office
- Have patient repeat instructions and demonstrate procedures.

WRITTEN TEST

OBJECTIVE 1

1, 4, 5, 7

OBJECTIVE 2

2, 3, 5, 7, 8

OBJECTIVE 3

1. S
2. L

OBJECTIVE 4

1. C 6. D
2. A 7. D
3. C 8. B
4. A 9. C
5. B 10. B

OBJECTIVE 5

1. C 6. B
2. A 7. D
3. D 8. A
4. C 9. C
5. A 10. C

OBJECTIVE 6

1. B 6. D
2. D 7. C
3. B 8. D
4. A 9. B
5. C 10. A

OBJECTIVE 7

1. C 6. A
2. C 7. C
3. D 8. B
4. B 9. C
5. D 10. A

OBJECTIVE 8

1. C
2. D
3. B
4. C
5. B
6. B
7. A
8. B
9. A
10. A

OBJECTIVE 9

2, 3, 5, 7, 8, 9, 11, 12, 15, 16, 18, 20

CIMC
TEST CODE SHEET

VOCATIONAL PROGRAM (BOOK TITLE) Pharmacology

UNIT NUMBER AND TITLE 3 - Identifying Classification and Effects of Medication

TOTAL NUMBER OF TEST QUESTIONS 87

TOTAL NUMBER OF BASIC SKILL QUESTIONS 80

OBJECTIVE NUMBER	TEST QUESTION NUMBER(S)	BASIC SKILL CODE(S)
1	1-7	X
2	1-8	S
3	1-2	S
4	1-10	S
5	1-10	S
6	1-10	S
7	1-10	S
8	1-10	S
9	1-20	S

ADMINISTERING MEDICATIONS

4

Required Activities and Resources: (R)

These are fully integrated components of this CIMC curriculum. They are usually packaged in or with the curriculum and are essential in meeting the learning objectives. To individualize this unit, use the LAP Sheet supplied in your resources.

- Reproducible handouts and Transparency Masters are included in the Instructor's Resource Package. Handouts should be copied for all students. Transparency Masters should be used to make overhead transparencies for use during instruction. A small copy of each Transparency Master appears in the student's Information Sheets.
- Non-reproducible resources are included in the student's curriculum.

Optional Activities and Resources: (O)

These are suggested high-interest activities to help deliver learning objectives to students or to let students achieve objectives in an applied context. Select as many as you wish to use. Some activities use extra resources for further information about unit content. You can make them available in the classroom for in-depth study or optional activities, but their use is not required for meeting CIMC unit objectives.

FOCUS ASSIGNMENTS

Prereading

R Have the students read the Handout, "The Five Rights."

Writing

R Have students write a short (two paragraphs to one page) discussion of how the incidents could have been prevented if the nurses had followed the five rights.

O Have the students discuss other instances where the five rights were not followed.

GENERAL INSTRUCTIONS

Assignment Sheets

R Review the directions and any specific guidelines.

R Make certain that any needed materials from the Instructor's Resource Package are available.

R Have the students complete the Assignment Sheet. Evaluate each student's performance and provide reteaching and retesting as necessary. Have the students repeat the Assignment Sheet until they achieve mastery.

R Complete each student's Competency Profile.

O Have the students volunteer to read aloud the directions and any special guidelines.

O Return the completed Assignment Sheets to the students so that they may use them for later reference if needed.

Job Sheets

R Review the introduction and evaluation criteria for the Job Sheet. Remind the students that they should not fill in the blanks in the Yes/No columns.

R Review and explain all general guidelines, safety cautions, and warnings.

R Make sure that all tools, equipment, and supplies are available.

R Demonstrate each of the procedures outlined in the Job Sheet.

R Allow the students to practice the Job Sheet skills before skills testing. Coach, correct, and supervise as necessary.

R Have the students complete the Job Sheet. Evaluate each student's performance and provide remediation as necessary. Have the students repeat the Job Sheet until they achieve mastery.

R Complete each student's Competency Profile.

R Return the completed Job Sheets to the students so that they may use them for later reference if needed.

O Have the students volunteer to read aloud the job guidelines, cautions, and warnings.

R Stress the importance of using universal precautions.

LAP Sheets

The LAP Sheets are an optional component that can be used to individualize instruction. The following instructions should be followed only if you are using the LAP Sheets.

R Explain the specific procedures to be followed to the students before they begin using the LAP Sheet. Be sure that each student understands the procedures for using the LAP Sheet.

R If you want the student to complete any of the assignments on the LAP Sheet that are labeled optional, assign these to the student. Be sure to provide any needed resources.

OBJECTIVE 1

List patient assessment data to use before administering medication.

R Discuss how assessment helps the average patient, as well as the patient with special needs.

O Ask students about any past experience in giving medication to family members or themselves by any route.

O Have students write a sample assessment on a patient that would meet the patient's medication administration needs.

OBJECTIVE 2

List the five rights of medication administration.

R Have students memorize and recite the five rights.

R Discuss different methods of patient identification; explain why some are more accurate than others.

R Discuss the frequency with which identification checks should be performed. For example, tell students how often you expect ID bands to be checked or names to be clarified.

O Ask the students to discuss why these five pieces of documentation are called *rights* and why the five rights could also be called the *five responsibilities.*

O Place students in five groups. Have each group present a short report on the value of one of the five rights.

O Set up situations in which the patient denies his or her identity (such as claiming to have the wrong arm band) and have students role-play.

OBJECTIVE 3

List steps to verify a medication during preparation.

- R Demonstrate the technique of verification at three points.
- R Analyze the reason for the three medication checkpoints.
- R Check the students for their understanding of the information on the medication label used during the administration of medications.

OBJECTIVE 4

Identify various systems of medication distribution.

- O Discuss how medications are distributed in local facility. If various facilities are used, have students work in groups to research the types of systems the facilities use and how they are implemented in each facility.
- O Discuss the advantages and disadvantages of each of the systems of medication distribution.

OBJECTIVE 5

Identify the various forms of medications.

OBJECTIVE 6

Select appropriate guidelines for administering medications other than injections.

- R Discuss the purpose for which each medication form is used.
- O Provide samples of each of the forms of medication.
- O Have students determine the form(s) in which the most common medications are found.
- O Provide the students with several inhalers and have them read the different directions found on each one.
- O Use case studies and scenarios to give students practice using guidelines.
- O While supervising, allow students to use the form of ammonia inhalants used in the local facility.

OBJECTIVE 7

Label the parts of a syringe and needle.

- R Use the Transparency Master to illustrate the parts of a syringe and needle. Have students label the syringe drawing in their student workbooks.
- R Provide several sample syringes for viewing.

R Allow students to handle syringes. Teach the students the areas of the syringes that can be touched.

R Discuss the reasons for maintaining the sterility of particular areas of the syringe.

R Check that students have correctly labeled the syringe drawing in their student workbooks.

OBJECTIVE 8

Select appropriate guidelines for preparing injections.

R Provide various needle and syringe sizes for viewing.

R Demonstrate loading of cartridges commonly used in the local facility. Provide the students with various cartridge syringes and medication inserts. Allow the students to practice inserting the cartridges.

R Discuss the safety precautions of the various cartridge syringes.

O Use case studies and scenarios to give students practice using guidelines.

O Discuss the advantages and disadvantages of cartridge syringes.

O Use mannequins to demonstrate the common areas for injection.

O Have students locate various injection sites on each other.

O Stress conditions under which particular injection sites should be avoided.

O During clinical situations, encourage students to identify the most appropriate site for each injection administered and provide the rationale.

OBJECTIVE 9

Select appropriate guidelines for administering intramuscular injections.

OBJECTIVE 10

Select appropriate guidelines for administering subcutaneous injections.

OBJECTIVE 11

Select appropriate guidelines for administering intradermal injections.

R Discuss the major sources of patient discomfort associated with an injection and encourage students to explore methods for reducing the discomfort.

- Position the patient to facilitate access of the site without strain: and allow relaxation of the muscle group involved.
- Large volumes and thick medications increase pressure and discomfort when injected and should always be administered slowly. Do not inject more than 2.5 - 3 cc of a thick medication.
- Anxiety response reduces the patient's pain tolerance. The nurse must instill confidence in the patient and encourage the patient to relax.
- Dulled needles must be changed after drawing up medication to reduce trauma with injection. If cost and hospital policy permit, all needles may be changed after drawing up medication.

O Use case studies and scenarios to give students practice using guidelines.

OBJECTIVE 12

Identify methods used when administering medications to a young child or infant.

R Discuss how the developmental level of the child affects the methods used in administration of medication.

R Demonstrate use of devices or methods of restraint used for infants and children during medication administration.

O Have students give techniques that they have seen or used and critique the technique based on the understanding of administering medications to children and infants.

OBJECTIVE 13

Select appropriate guidelines for using standing orders.

R Stress the proper procedure for documenting administration of a standing order.

OBJECTIVE 14

Use standing orders. (Assignment Sheet 1).

R See the general instructions for all Assignment Sheets.

OBJECTIVE 15 **Identify guidelines for reading a medicine glass.**

R Place different liquids in medicine cups and have the students read the amounts of medication in the cups. Demonstrate the meniscus of different medications, such as Maalox compared with KCl.

OBJECTIVE 16 **Read a medicine glass. (Assignment Sheet 2)**

R See the general instructions for all Assignment Sheets.

OBJECTIVE 17 **Communicate appropriately during administration of medication. (Assignment Sheet 3)**

R See the general instructions for all Assignment Sheets.

O Have students role-play taking and administering medications. Show appropriate and inappropriate responses.

O Relate personal experiences regarding communication during medication administration.

OBJECTIVE 18 **Prepare an injection from a single or a multi-dose vial. (Job Sheet 1)**

R See the general instructions for all Job Sheets.

OBJECTIVE 19 **Prepare an injection from an ampule. (Job Sheet 2)**

R See the general instructions for all Job Sheets.

R Stress the importance of avoiding the sharp edges of the ampule, using filter needles, and safely discarding the ampule.

OBJECTIVE 20 **Administer sublingual medication. (Job Sheet 3)**

OBJECTIVE 21 **Administer buccal medication. (Job Sheet 4)**

R See the general instructions for all Job Sheets.

R Discuss medications given by these routes in the local facility.

OBJECTIVE 22 **Apply topical medication. (Job Sheet 5)**

OBJECTIVE 23 **Administer eye medication. (Job Sheet 6)**

R See the general instructions for all Job Sheets.

OBJECTIVE 24 **Administer ear medication. (Job Sheet 7)**

R See the general instructions for all Job Sheets.

R Discuss the difference between adult and child ear medication administration; demonstrate pulling the ear of a child and of an adult.

OBJECTIVE 25 **Administer nasal medication. (Job Sheet 8)**

OBJECTIVE 26 **Administer oral medication. (Job Sheet 9)**

R See the general instructions for all Job Sheets.

OBJECTIVE 27 **Crush medication for administration. (Job Sheet 10)**

R See the general instructions for all Job Sheets.

O Identify medications that should not be crushed.

OBJECTIVE 28 **Administer medication by nasogastric tube. (Job Sheet 11)**

R See the general instructions for all Job Sheets.

R Stress the importance of connecting the tube to continuous feeding or maintaining the clamping of the NG being used for suction.

OBJECTIVE 29 **Administer a subcutaneous injection. (Job Sheet 12)**

OBJECTIVE 30 **Administer subcutaneous insulin. (Job Sheet 13)**

OBJECTIVE 31 **Administer subcutaneous heparin. (Job Sheet 14)**

R See the general instructions for all Job Sheets.

R Discuss why procedures for administering insulin and heparin differ from other subcutaneous injections.

R Stress the method used when handling insulin, the local policy about glucose levels, and the importance of patient teaching.

R Use an injectable mannequin for practice.

OBJECTIVE 32

Administer an intramuscular injection. (Job Sheet 15)

R See the general instructions for all Job Sheets.

R Use an injectable mannequin for practice.

OBJECTIVE 33

Administer medication by z-track method. (Job Sheet 16)

R See the general instructions for all Job Sheets.

R Discuss when the z-track method should be used.

OBJECTIVE 34

Administer an intradermal injection. (Job Sheet 17)

R See the general instructions for all Job Sheets.

R Have students observe and/or participate in local TB clinic.

OBJECTIVE 35

Combine medications for injection. (Job Sheet 18)

R See the general instructions for all Job Sheets.

R Provide a medication interaction/compatibility chart for students' use.

OBJECTIVE 36

Prepare an injection from dry medication using diluent. (Job Sheet 19)

R See the general instructions for all Job Sheets.

O Have students list medications that are available in dry form.

OBJECTIVE 37

Administer a rectal suppository. (Job Sheet 20)

R See the general instructions for all Job Sheets.

OBJECTIVE 38

Administer a vaginal suppository. (Job Sheet 21)

R See the general instructions for all Job Sheets.

R Stress patient privacy and handling of the suppository.

R Discuss the indications for this form of medication and relate to patient teaching.

EVALUATION

Pretest

- Use the unit Written Test for *both* the pretest and posttest. Give the students the pretest before they begin the unit.
- You may wish to use the CIMC publication *Measuring Learning and Competency Gains: The Pretest/Posttest Approach* for instructions and suggestions on giving pretests and using the results. Information for ordering this material is included in the optional resources section.
- Use pretest results to guide individual students in progressing through the unit, doing enrichment work, or moving to the next unit.

Focus Assignment

- Use an informal evaluation of the focus assignments as a diagnostic tool for determining if any students need extra help in reading comprehension or writing skills. Refer these students to their English instructor, Learning Resource Center, or Educational Enhancement Center.

Assignment Sheet

- Evaluate students on Assignment Sheet activities. Students must repeat an Assignment Sheet until they have mastered the activity.
- Complete each student's Competency Profile.

Skill Test

- Explain to the students that they will be asked to demonstrate the procedures on the Job Sheets as a skills test.
- Describe the rating scale used on the skills test.
- Reteach and retest as necessary.

- Complete each student's Competency Profile.

Posttest

- After they have completed the unit, give students the Written Test again.
- Explain to the students that they will be asked to demonstrate on the Written Test actions listed in the specific objectives.
- You may wish to use the CIMC publication *Measuring Learning and Competency Gains: The Pretest/Posttest Approach* for instructions and suggestions on giving posttests and using the results. Information for ordering this material is included in the optional resources section.
- Reteach and retest as necessary to meet individual student needs and state standards for student learning and competency gains.
- Complete the appropriate sections of the Competency Profiles.
- Review individual and group performance to evaluate teaching effectiveness. Adjust scope, sequence, or instructional methods for additional lessons as required.

REQUIRED RESOURCES

The items marked with an asterisk are included in the Instructor's Resource Package.

Publications

- "The Five Rights." Handout*

OPTIONAL RESOURCES

Publications

- *Measuring Learning and Competency Gains: The Pretest/Posttest Approach.* Stillwater, OK: CIMC, Oklahoma Department of Vocational and Technical Education, 1992. For ordering information call 800-522-5810.

Other Media

Contact the following organizations for catalogs and materials:

- Concept Media, P.O. Box 19542, Irvine, CA: 92713-9542, 800-233-7078.

- Health Edco, P.O. Box 21207, Waco, TX: 76702-1207, 800-433-2677.
- Medcom-Trainex, 12601 Industry Street, Garden Grove, CA: 92641, 800-877-1443.

UNIT REFERENCES

- Christensen, Barbara, and Elaine Kockrow. *Foundations of Nursing*. St. Louis: Mosby-Year Book, 1991.
- Cohen, Michael. “Medication Errors: Deadly Mix-Up.” *Nursing 93*, June 1993, p. 14.
- McConnell, Edwina. “Clinical Do's & Don'ts: How to Administer a Z-Track Injection.” *Nursing 93*, April 1993, p. 18.
- “Clinical Do's & Don'ts: How to Instill Nose Drops.” *Nursing 93*, July 1993, p. 18.

ASSIGNMENT SHEETS

OBJECTIVE 14

Assignment Sheet 1

1. None of the standing orders should be implemented. Call the physician. Pain medication may mask significant symptoms, and MOM may aggravate the cause of a GI problem.

2. The patient is having muscle spasms; administer Valium and assess relief. Continue making neurovascular checks.

3. Assess for severity of pain. This patient should not receive aspirin; if her pain is severe, call the physician for other orders.

OBJECTIVE 16

Assignment Sheet 2

1. a. 30 cc
   b. 2 Tbs

2. a. 10 cc
   b. 2 tsp

3. a. 25 cc
   b. 5 tsp or 1 2/3 Tbsp

4. a. 20 cc
   b. 4 dr

5. a. 15 cc
   b. 3 dr or 1/2 oz

6. a. 30 cc
   b. 1 oz.

7. a. 4 dr
   b. 4 tsp or 1 1/3 Tbsp

8. a. 2 dr
   b. 2 tsp

9. a. 2 Tbsp
   b. 1 oz.

OBJECTIVE 17

Assignment Sheet 3

1. How long has the patient been on insulin? Does the patient do self-injection? Is there a change in any previous or home order of insulin?

2. Explain the need for thorough bowel evacuation prior to abdominal surgery.

3. Stress the importance of maintaining the blood level of the antibiotic to prevent recurrence of infection.

4. Ask if the patient knows which tablet is which. Check for side effects of either drug. Check for patient's knowledge of her need for potassium while taking these drugs.

WRITTEN TEST

OBJECTIVE 1

Answers may be listed in any order

- allergies
- age
- body build
- desired effect
- diagnosis
- drug interaction
- drug tolerance
- emotional state
- indication
- medication history
- patient knowledge
- physical state
- present symptoms
- timing of dosage
- treatment goals

OBJECTIVE 2

Answers may be listed in any order

- right patient
- right medication
- right dosage
- right route
- right time

OBJECTIVE 3

Answers may be listed in any order

- when you obtain the medication from the drawer or cabinet
- when you pour or prepare the medication
- when you return the medication to the cabinet

OBJECTIVE 4

1. C
2. B
3. A

OBJECTIVE 5

Part 1

1. L 6. K
2. C 7. F
3. D 8. E
4. M 9. O
5. I 10. J

Part 2

1. M 6. F 11. K
2. J 7. N
3. H 8. O
4. I 9. C
5. E 10. B

Part 3

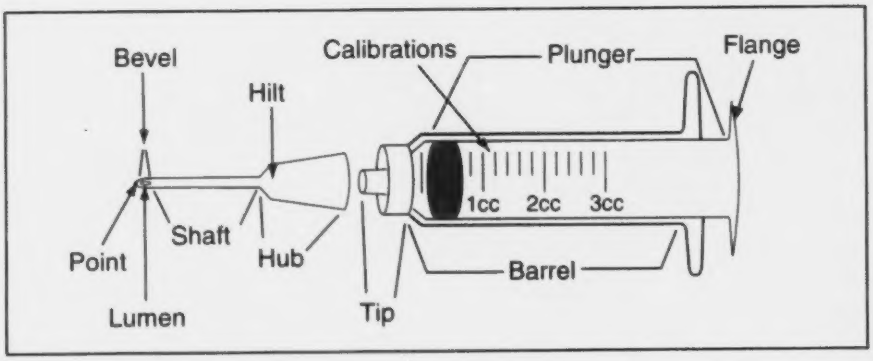
1. K 6. A
2. E 7. N
3. I 8. C
4. F 9. B
5. H 10. O

OBJECTIVE 6

1. F 6. F 11. T 16. T 21. T 26. F
2. T 7. F 12. F 17. F 22. T 27. T
3. T 8. T 13. T 18. T 23. T 28. F
4. T 9. F 14. F 19. F 24. F 29. T
5. F 10. T 15. T 20. T 25. T 30. T

31. F 36. T
32. F 37. T
33. T 38. F
34. F 39. T
35. F

OBJECTIVE 7


Bevel
Calibrations
Plunger
Flange
Hilt
1cc
2cc
3cc
Shaft
Point
Hub
Barrel
Lumen
Tip

OBJECTIVE 8

1. T
2. F
3. F
4. T
5. F
6. T
7. T
8. F
9. F
10. T
11. F
12. T
13. T
14. F
15. F
16. T
17. T
18. T
19. F
20. T
21. T
22. T
23. F
24. F
25. T

OBJECTIVE 9

1. F
2. F
3. T
4. T
5. F
6. T
7. F
8. T
9. F
10. F
11. T
12. T
13. T

OBJECTIVE 10

1. F
2. T
3. T
4. F
5. F
6. F
7. T
8. F
9. T
10. F
11. T
12. T
13. T
14. F
15. T
16. F
17. T

OBJECTIVE 11

1. F
2. F
3. T
4. F

OBJECTIVE 12

1. T
2. F
3. T
4. F
5. F
6. T
7. F
8. F
9. T
10. T
11. T
12. F
13. T
14. F
15. T
16. F
17. T
18. T
19. T
20. F
21. T
22. T
23. T

OBJECTIVE 13

1, 3, 4, 5, 7, 8

OBJECTIVE 15

2, 4

CIMC
TEST CODE SHEET

VOCATIONAL PROGRAM (BOOK TITLE) **Pharmacology**

UNIT NUMBER AND TITLE **4 - Administering Medications**

TOTAL NUMBER OF TEST QUESTIONS **202**

TOTAL NUMBER OF BASIC SKILL QUESTIONS **65**

OBJECTIVE NUMBER	TEST QUESTION NUMBER(S)	BASIC SKILL CODE(S)
1	1-15	X
2	1-5	X
3	1-3	X
4	1-3	X
5	1-10; 1-11; 1-10	S
6	1-39	X
7	1-11	X
8	1-25	X
9	1-13	S
10	1-17	S
11	1-4	S
12	1-23	X
13	1-9	X
14	Evaluated on AS 1	
15	1-4	X
16	Evaluated on AS 2	
17	Evaluated on AS 3	
18-38	Evaluated on JS 1-21	

INSTRUCTOR'S GUIDE

ASSISTING WITH INTRAVENOUS THERAPY

5

Required Activities and Resources (R)

These are fully integrated components of this CIMC curriculum. They are usually packaged in or with the curriculum and are essential in meeting the learning objectives. To individualize this unit, use the LAP Sheet supplied in your resources.

- Reproducible handouts and Transparency Masters are included in the Instructor's Resource Package. Handouts should be copied for all students. Transparency Masters should be used to make overhead transparencies for use during instruction. A small copy of each Transparency Master appears in the student's Information Sheets.
- Non-reproducible resources are included in the student's curriculum.

Optional Activities and Resources (O)

These are suggested high-interest activities to help deliver learning objectives to students or to let students achieve objectives in an applied context. Select as many as you wish to use. Some activities use extra resources for further information about unit content. You can make them available in the classroom for in-depth study or optional activities, but their use is not required for meeting CIMC unit objectives.

FOCUS ASSIGNMENTS

Prereading

R Have students read the Handout, "Infection Control." Have them pay special attention to aspects of intravenous therapy that are affected by infection control measures.

Writing

R Have students write a short (1 paragraph to 1 page) explanation of how infection control measures affect nurses assisting with intravenous therapy.

GENERAL INSTRUCTIONS

Assignment Sheets

R Review the directions and any specific guidelines.

R Make certain that any needed materials from the Instructor's Resource Package are available.

R Have the students complete the Assignment Sheet. Evaluate each student's performance and provide reteaching and retesting as necessary. Have the students repeat the Assignment Sheet until they achieve mastery.

R Complete each student's Competency Profile.

O Have the students volunteer to read aloud the directions and any special guidelines.

O Return the completed Assignment Sheets to the students so that they may use them for later reference if needed.

Job Sheets

R Review the introduction and evaluation criteria for the Job Sheet. Remind the students that they should not fill in the blanks in the Yes/No columns.

R Review and explain all general guidelines, safety cautions, and warnings.

R Make sure that all tools, equipment, and supplies are available.

R Demonstrate each of the procedures outlined in the Job Sheet.

R Allow the students to practice the Job Sheet skills before skills testing. Coach, correct, and supervise as necessary.

R Have the students complete the Job Sheet. Evaluate each student's performance and provide remediation as necessary. Have the students repeat the Job Sheet until they achieve mastery.

R Complete each student's Competency Profile.

R Return the completed Job Sheets to the students so that they may use them for later reference if needed.

O Have the students volunteer to read aloud the job guidelines, cautions, and warnings.

LAP Sheets

The LAP Sheets are an optional component that can be used to individualize instruction. The following instructions should be followed only if you are using the LAP Sheets.

R Explain the specific procedures to be followed to the students before they begin using the LAP Sheet. Be sure that each student understands the procedures for using the LAP Sheet.

R If you want the student to complete any of the assignments on the LAP Sheet that are labeled optional, assign these to the student. Be sure to provide any needed resources.

OBJECTIVE 1

Identify the general purposes for intravenous therapy.

O Use patients in clinical areas as examples to identify specific purposes for intravenous therapy.

O Have a physician or pharmacist discuss how choices can be made in ordering IV therapy.

OBJECTIVE 2

Distinguish among the methods of medication administration using intravenous therapy.

R Show transparency.

O Demonstrate the four different methods and show the equipment used for each method of administration.

O Give students the abbreviations the local facility uses for each method and discuss how different abbreviations may be used in different facilities.

EXAMPLE: Some facilities use IVPB to mean *IV piggyback*, while others use the same abbreviation for *IV push bolus*.

OBJECTIVE 3

Identify common sites for intravenous therapy.

R Discuss the advantages and disadvantages of each site.

OBJECTIVE 4

Distinguish among the effects of isotonic, hypotonic, and hypertonic intravenous fluid.

R Give students specific diagnoses and symptoms that would require an IV solution. Have the students identify which type of solution should be used and why.

☑ **NOTE:** Remind students that nurses do not make the decision, but should be familiar with the information to help ensure the safety of the patient.

R Discuss the use of fluids with no or minimal dextrose for diabetic patients.

O Illustrate the effects of hypotonic solutions on cells by using water and a natural sponge. The cells of a dry sponge are dehydrated and absorb the water through the same type of processes as the dehydrated patient absorbs the hypotonic solution. Explain that the sponge's natural ocean habitat is hypertonic to humans but isotonic to the sponge, which allows it to maintain shape while living and growing.

OBJECTIVE 5 **Identify the advantages and disadvantages of intravenous therapy.**

R Discuss the advantages and disadvantages for both medications and the fluid therapy of IVs.

R Stress the safety factors and the importance of constant monitoring.

O Give examples of desired and undesired effects of IVs from past experiences.

OBJECTIVE 6 **Discuss the steps of the nursing process as they relate to patients receiving IV therapy.**

O Have students work with an IV team in the local facility.

OBJECTIVE 7 **Give the formula to calculate the flow rate of IV fluids.**

OBJECTIVE 8 **Calculate the flow rate of IV fluids. (Assignment Sheet 1)**

R Demonstrate the preferred method of calculation.

R Discuss documentation of IV intake and have students practice effective documentation.

R Point out to students that abbreviations, methods, and terms used may vary according to facility; facility policy should always be followed.

OBJECTIVE 9

Select appropriate guidelines for assisting with IV therapy.

- R Discuss the nursing process which results from IV therapy on nursing care plans.

OBJECTIVE 10

Identify the purpose and risks of infusion pumps.

- R See the general instructions for all assignment sheets.
- R Demonstrate use of common controllers and pumps in local facility.
- O Invite a guest speaker who has an infusion port or specializes in the care of infusion ports.
- O Demonstrate the differences in needles used with infusion ports.
- O Have students problem-solve and generalize about risks which may be connected with the controllers in the local facility.
- O Discuss the choice of whether to use controllers in certain settings: ICU, emergency room, general med-surg floor, pediatrics.

OBJECTIVE 11

Apply the nursing process to care for patients receiving intravenous therapy. (Assignment Sheet 2)

- R See the general instructions for all Assignment Sheets.
- O Have students work in groups to think of better solutions to their individual answers on the assignment sheet.

OBJECTIVE 12

Assess and document IV therapy. (Job Sheet 1)

- R See the general instructions for all Job Sheets.
- R Discuss assessment data.
- R Demonstrate procedures to collect assessment data.
- R Discuss importance of documentation of assessment data.
- R Practice appropriate documentation procedures.

OBJECTIVE 13

Change peripheral IV tubing. (Job Sheet 2)

R See the general instructions for all Job Sheets.

R Demonstrate procedure of changing tubing with different pumps and controllers.

OBJECTIVE 14

Change IV dressings. (Job Sheet 3)

R See the general instructions for all Job Sheets.

O Provide dressing material used in local facilities.

O Discuss preferences of the local facility.

OBJECTIVE 15

Discontinue intravenous therapy. (Job Sheet 4)

R See the general instructions for all Job Sheets.

O Discuss local policy regarding sending the tip of the catheter to the lab for detection of possible sepsis.

OBJECTIVE 16

Convert an IV to a heparinized lock and maintain. (Job Sheet 5)

R See the general instructions for all Job Sheets.

O Show examples of different heparin lock devices.

O Provide a sample of heparin flush solution to compare to heparin for subcutaneous use.

OBJECTIVE 17

Change an IV flow rate. (Job Sheet 6)

OBJECTIVE 18

Change an IV container. (Job Sheet 7)

R See the general instructions for all Job Sheets.

EVALUATION

Pretest

- Use the unit Written Test for *both* the pretest and posttest. Give the students the pretest before they begin the unit.

- You may wish to use the CIMC publication *Measuring Learning and Competency Gains: The Pretest/Posttest Approach* for instructions and suggestions on giving pretests and using the results. Information for ordering this material is included in the optional resources section.

- Use pretest results to guide individual students in progressing through the unit, doing enrichment work, or moving to the next unit.

Focus Assignment

- Use an informal evaluation of the focus assignments as a diagnostic tool for determining if any students need extra help in reading comprehension or writing skills. Refer these students to their English instructor, Learning Resource Center, or Educational Enhancement Center.

Assignment Sheet

- Evaluate students on Assignment Sheet activities. Students must repeat an Assignment Sheet until they have mastered the activity.

- Complete each student's Competency Profile.

Skill Test

- Explain to the students that they will be asked to demonstrate the procedures on the Job Sheets as a skills test.

- Describe the rating scale used on the skills test.

- Reteach and retest as necessary.

- Complete each student's Competency Profile.

Posttest

- After they have completed the unit, give students the Written Test again.

- Explain to the students that they will be asked to demonstrate on the Written Test actions listed in the specific objectives.

- You may wish to use the CIMC publication *Measuring Learning and Competency Gains: The Pretest/Posttest Approach* for instructions and suggestions on giving posttests and using the results. Information for ordering this material is included in the optional resources section.

- Reteach and retest as necessary to meet individual student needs and state standards for student learning and competency gains.
- Complete the appropriate sections of the Competency Profiles.
- Review individual and group performance to evaluate teaching effectiveness. Adjust scope, sequence, or instructional methods for additional lessons as required.

REQUIRED RESOURCES

The items marked with an asterisk are included in the Instructor's Resource Package.

Publications

- "Infection Control." Handout.*

OPTIONAL RESOURCES

Publications

- LaRocca, Joanne, and Shirley Otto. *Pocket Guide to Intravenous Therapy*. St. Louis: Mosby-Year Book, 1993.
- *Measuring Learning and Competency Gains: The Pretest/Posttest Approach*. Stillwater, OK: CIMC, Oklahoma Department of Vocational and Technical Education, 1992. For ordering information call 800-522-5810.

UNIT REFERENCES

- Christensen, Barbara, and Elaine Kockrow. *Foundations of Nursing*. St. Louis: Mosby-Year Book, 1991.
- LaRocca, Joanne, and Shirley Otto. *Pocket Guide to Intravenous Therapy*. St. Louis: Mosby-Year Book, 1993.
- Long, Barbara, and Wilma Phipps. *Medical-Surgical Nursing: A Nursing Process Approach*. St. Louis: C.V. Mosby Company, 1989.

ANSWERS

ASSISTING WITH INTRAVENOUS THERAPY

5

ASSIGNMENT SHEETS

OBJECTIVE 8

Assignment Sheet 1

1. 20.8 or 21 gtt/min
2. 20.8 or 21 gtt/min
3. 150 gtt/min
4. 41.6 or 42 gtt/min
5. 750 cc
6. a. 140 cc
   b. 310 cc
   c. 160 cc
   d. 290 cc

OBJECTIVE 11

Assignment Sheet 2

☑ **NOTE:** These are suggested answers. Other answers may also be appropriate.

1. An armboard may be useful. Determine why the patient is discontinuing the IV. Restraint would be last choice of action.

2. An armboard may be applied, but the nurse must meet more needs of this patient such as assistance with eating, daily hygiene, and changing dependence/independence status.

3. Provide extra tubing to accommodate IV in foot. Assess patient for understanding of care of IV and site. Provide appropriate covering such as plastic bag if shower is taken.

4. A plastic medicine cup or a styrofoam cup may be taped over the site to protect it or a thick dressing may be used. Determine positioning necessary to work with these.

WRITTEN TEST

OBJECTIVE 1

2, 3

OBJECTIVE 2

1. G
2. A
3. I
4. E
5. C

OBJECTIVE 3

1, 3, 5, 6

OBJECTIVE 4

1. C
2. A
3. B

OBJECTIVE 5

1. D 5. D 9. D
2. A 6. X 10. A
3. D 7. X 11. D
4. X 8. A 12. X

OBJECTIVE 6

1. C
2. A
3. D
4. B
5. A

OBJECTIVE 7

$$\frac{\text{total amount of solution} \quad \text{X} \quad \text{tubing drop factor}}{\text{hours to be infused} \quad \text{X} \quad \text{60 minutes}} = \text{gtt/min}$$

OBJECTIVE 8

Evaluated on Assignment Sheet 1

OBJECTIVE 9

1. C 6. A
2. B 7. B
3. A 8. D
4. C 9. D
5. B 10. B

OBJECTIVE 10	1. X 5. X 2. R 6. R 3. P 7. P 4. X 8. R
OBJECTIVE 11	**Evaluated on Assignment Sheet 2**
OBJECTIVE 12	**Evaluated on Job Sheet 1**
OBJECTIVE 13	**Evaluated on Job Sheet 2**
OBJECTIVE 14	**Evaluated on Job Sheet 3**
OBJECTIVE 15	**Evaluated on Job Sheet 4**
OBJECTIVE 16	**Evaluated on Job Sheet 5**
OBJECTIVE 17	**Evaluated on Job Sheet 6**
OBJECTIVE 18	**Evaluated on Job Sheet 7**

CIMC
TEST CODE SHEET

VOCATIONAL PROGRAM (BOOK TITLE) Pharmacology

UNIT NUMBER AND TITLE — 5 - Assisting with Intravenous Therapy

TOTAL NUMBER OF TEST QUESTIONS 56

TOTAL NUMBER OF BASIC SKILL QUESTIONS 46

OBJECTIVE NUMBER	TEST QUESTION NUMBER(S)	BASIC SKILL CODE(S)
1	1-4	X
2	1-5	X
3	1-8	S
4	1-3	S
5	1-12	S
6	1-5	S
7	1	X
8	Evaluated on AS 1	
9	1-10	S
10	1-8	S

Pharmacology

Instructor's Resource Package

LAP Sheets

Transparency Masters

Written Tests

Developed by the
Curriculum and Instructional Materials Center
for the Division of Health Occupations
Oklahoma Department of Vocational and Technical Education

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Curriculum and Instructional Materials Center

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LAP
SHEET

CALCULATING MEDICATION DOSAGES

1

Check the blank as you complete each step.

1. **Take** ___ the pretest provided by your instructor. Have your instructor evaluate your completed test. After your test has been evaluated, follow your instructor's recommendations.

2. **Read** ___ the introduction, unit objective, and specific objectives.

3. **Do** ___ the focus assignments.

4. **Stop** ___ and have your instructor evaluate your work from the focus assignment. After your work has been evaluated, follow your instructor's recommendations.

5. **Study** ___ the Information Sheet, objective 1.

Optional: **Ask** ___ your instructor to use flash cards to teach you the units in each system.

6. **Study** ___ the Information Sheet, objective 2.

Optional: **Ask** ___ your instructor to show you measuring devices or posters.

7. **Do** ___ Assignment Sheet 1. Your instructor will read numbers to you or provide a tape for you to listen to.

Optional: **Ask** ___ your instructor to discuss the importance of listening when verbal or phone orders are taken.

Optional: **Practice** ___ repeating numbers to other students.

Optional: **Practice** ___ writing numbers and reading them aloud.

8. **Stop** ___ and have your instructor evaluate your work from the Assignment Sheet. After your work has been evaluated, follow your instructor's recommendations.

May be photocopied for student use.

9. **Ask** ___ your instructor for individualized study if you need extra practice in basic math skills.

10. **Do** ___ Assignment Sheet 2.

Optional: Work ___ with flash cards (with your instructor or another student) for a review of math skills.

Optional: Work ___ with another student to develop basic math problems, then trade and solve each other's problems.

11. **Stop** ___ and have your instructor evaluate your work from the Assignment Sheet. After your work has been evaluated, follow your instructor's recommendations.

12. **Do** ___ Assignment Sheet 3.

Optional: Practice ___ calculating by changing the number of servings in a recipe.

13. **Stop** ___ and have your instructor evaluate your work from the Assignment Sheet. After your work has been evaluated, follow your instructor's recommendations.

14. **Do** ___ Assignment Sheet 4.

Optional: Ask ___ your instructor to use money or the grading system to illustrate the use of decimals.

15. **Stop** ___ and have your instructor evaluate your work from the Assignment Sheet. After your work has been evaluated, follow your instructor's recommendations.

16. **Study** ___ the Information Sheet, objective 7.

Optional: Ask ___ your instructor how ratio and proportion is used for planning group activities.

17. **Do** ___ Assignment Sheet 5.

May be photocopied for student use.

18. **Stop** ___ and have your instructor evaluate your work from the Assignment Sheet. After your work has been evaluated, follow your instructor's recommendations.

19. **Study** ___ the Information Sheet, objective 9.

20. **Ask** ___ your instructor for individualized study of Roman numerals if you need extra practice.

21. **Do** ___ Assignment Sheet 6.

22. **Stop** ___ and have your instructor evaluate your work from the Assignment Sheet. After your work has been evaluated, follow your instructor's recommendations.

23. **Study** ___ the Information Sheets, objectives 11 and 12.

24. **Ask** ___ your instructor to show you utensils used in each system of measurement.

Optional:
Ask ___ your instructor which equivalents are most useful in your area; highlight these on the chart.

25. **Do** ___ Assignment Sheet 7.

26. **Stop** ___ and have your instructor evaluate your work from the Assignment Sheet. After your work has been evaluated, follow your instructor's recommendations.

27. **Study** ___ the Information Sheet, objective 14.

28. **Ask** ___ your instructor what other terms are used when discussing the information necessary for dosage calculation.

29. **Do** ___ Assignment Sheet 8.

30. **Stop** ___ and have your instructor evaluate your work from the Assignment Sheet. After your work has been evaluated, follow your instructor's recommendations.

31. **Do** ___ Assignment Sheet 9.

32. **Stop** ___ and have your instructor evaluate your work from the Assignment Sheet. After your work has been evaluated, follow your instructor's recommendations.

May be photocopied for student use.

33. **Do** ___ Assignment Sheet 10.

34. **Ask** ___ your instructor how mg/kg of body weight increases the effectiveness of medication for the individual client.

Optional: Study ___ common medications to find the mg/kg recommended.

35. **Stop** ___ and have your instructor evaluate your work from the Assignment Sheet. After your work has been evaluated, follow your instructor's recommendations.

36. **Do** ___ Assignment Sheet 11.

37. **Ask** ___ your instructor for the method preferred by your local facility.

Optional: Ask ___ your instructor why dosages based on weight are more accurate than those based on age.

Optional: Ask ___ your instructor to show you a nomogram used in computing pediatric dosage according to body surface area (BSA).

Optional: Read ___ the section on the BSA method in *Dosage Calculations* and work the exercises.

38. **Stop** ___ and have your instructor evaluate your work from the Assignment Sheet. After your work has been evaluated, follow your instructor's recommendations.

39. **Study** ___ the Information Sheet, objective 19.

40. **Ask** ___ your instructor to discuss the standard procedure expected of students and how this procedure will change when working as a licensed nurse.

41. **Study** ___ written policies from other facilities and look for slight differences.

Optional: Study ___ examples of lawsuits that are based solely on an individual's failure to follow standard policy in a drug dosage situation.

42. **Do** ___ Assignment Sheet 12.

May be photocopied for student use.

43. Stop ___ and have your instructor evaluate your work from the Assignment Sheet. After your work has been evaluated, follow your instructor's recommendations.

44. Take ___ the posttest provided by your instructor. Have your instructor evaluate your completed test. After your test has been evaluated, follow your instructor's recommendations.

May be photocopied for student use.

WRITTEN TEST

CALCULATING MEDICATION DOSAGES

1

Name ______________________________ Score __________

OBJECTIVE 1

List the units in each measurement system used in pharmacology. List the units in the blanks.

Metric system

- distance

____

____

- volume

____

____

____

____

- weight

____

____

____

May be photocopied for student use.

Apothecary system

- volume

- weight

Household system

- distance

- volume

May be photocopied for student use.

- weight

____

____

OBJECTIVE 2 **Distinguish between characteristics of each system of measurement.**

Each statement describes one system of measurement. Write an "A" for apothecary, "M" for metric, or "H" for household in the blanks provided.

___ 1. Least accurate system

___ 2. Difficult to discriminate between and transcribe symbols

___ 3. System used only in pharmacology

___ 4. Most scientifically accurate measurements

___ 5. Clients are familiar with these measurements and have utensils for this system

___ 6. Old system that is being phased out

OBJECTIVE 3 **Evaluated on Assignment Sheet 1**

OBJECTIVE 4 **Evaluated on Assignment Sheet 2**

OBJECTIVE 5 **Evaluated on Assignment Sheet 3**

OBJECTIVE 6 **Evaluated on Assignment Sheet 4**

May be photocopied for student use.

OBJECTIVE 7

Identify the parts of a proportion statement. Use the proportion statement given below. Write the correct answers in the blanks provided.

1 yard : 3 feet :: 12 yards : unknown feet

1. known a ______________________________
2. unknown a ______________________________
3. known b ______________________________
4. unknown b ______________________________
5. means ______________________________
6. extremes ______________________________

OBJECTIVE 8

Evaluated on Assignment Sheet 5

OBJECTIVE 9

Complete rules for using apothecary Roman numerals. Write the correct answers in the blanks provided.

1. ss = ________ .
2. Always read a group of Roman numerals as ____________.
3. Read the numbers from _______ to _________.
4. When a smaller number follows a larger number, ____________ ______________________________.
5. When a smaller number precedes a larger number, ______________ ____________________.
6. When a smaller number is between two larger numbers, ________ first, then ____________.
7. The maximum number of like symbols in a row is ________.
8. In the apothecary system, Roman numerals above _____ are expressed with Arabic numerals.
9. When a Roman numeral is used, it should be placed _______ the unit of measurement. When an Arabic numeral is used, it should be placed ______ the unit of measurement.

May be photocopied for student use.

OBJECTIVE 10 **Evaluated on Assignment Sheet 6**

OBJECTIVE 11 **Use a chart to determine equivalents among the three systems of measurement.** Use the following charts to determine the equivalents below. Write the correct answers in the blanks provided.

Fluids		
Metric	**Apothecary**	**Household**
0.060 ml	m i	1 gtt
1 ml (cc)	m xv (15 m)	15 gtt
5 ml	1 fl dr, f	1 tsp
15 ml	3 f	1 tbsp
30 ml	1 fld oz	2 tbsp (⅛ cup)
250 ml	8 fld oz	1 cup or glass
500 ml	16 fld oz	1 pt
1000 ml (1 L)	32 fld oz	1 qt
4 L	128 fld oz	1 gal

Weight		
Metric	**Apothecary**	**Household**
0.4 mg	gr 1/150	
1 mg	gr 1/60	
60 mg (0.060 G)	gr i	
500 mg (0.5 G)	gr viiss (7½ gr)	⅛ tsp
1000 mg (1 G)	gr xv (15 gr)	¼ tsp
4 G (4000 mg)	60 gr (1 dr)	1 tsp
15 G	4 dr	1 tbsp
30 G	1 oz	2 tbsp
0.455 Kg	12 oz	1 lb
1 Kg		2.2 lb

May be photocopied for student use.

1. 1 tsp = ___ dr

2. 30 ml = ___ oz

3. 250 cc = ___ cup

4. 60 mg = ___ gr

5. 1 lb = ___ kg

6. 1/8 tsp = ___ G

7. 0.060 ml = ___ gtt

8. 1 tbsp = ___ G

9. 8 fl oz = ___ ml/cc

10. 1 gal = ___ L

11. 500 mg = ___ gr

12. gr 1/150 = ___ mg

13. 1000 mg = ___ gr

14. 1 fl dr = ___ tsp

15. 1 Kg = ___ lb

OBJECTIVE 12

Give the formula for using ratio and proportion to convert medication dosages from one unit of measurement to another unit of measurement. Write the correct answers in the blanks provided.

__________ : __________ :: __________ : __________

OBJECTIVE 13

Evaluated on Assignment Sheet 7

May be photocopied for student use.

OBJECTIVE 14 **List the information necessary for dosage calculation.** Write the information necessary for dosage calculation in the blanks provided.

____

____

____

OBJECTIVE 15 **Evaluated on Assignment Sheet 8**

OBJECTIVE 16 **Evaluated on Assignment Sheet 9**

OBJECTIVE 17 **Evaluated on Assignment Sheet 10**

OBJECTIVE 18 **Evaluated on Assignment Sheet 11**

OBJECTIVE 19 **List steps to take when calculated results show unusual dosage results.** List the steps in the blanks provided.

1. ____
   ____
2. ____
   ____
3. ____
   ____
4. ____
   ____
5. ____
   ____

OBJECTIVE 20 **Evaluated on Assignment Sheet 12**

May be photocopied for student use.

Alternative Methods for Calculating Pediatric Dosages

A pediatric dosage of a medication is a fraction of the adult dose. It can be calculated according to the patient's body surface area, weight, or age. Accuracy is extremely important in calculating medication dosages for infants and children. The most accurate dosages are calculated based on the patient's body surface area. However, this method is somewhat complicated and requires a special chart called a *nomogram*. Clark's Rule, which is based on a child's weight, is commonly used. You will learn how to use Clark's Rule in objective 17. As a practical nurse, you should use whatever method is used by your facility.

Listed below are some calculation methods that are based on the patient's age.

- Fried's rule

$$\frac{\text{Age (in months)}}{150} \times \text{adult dose} = \text{infant dose}$$

- Young's rule

$$\frac{\text{Age of child (in years)}}{\text{Age of child} + 12} \times \text{adult dose} = \text{child's dose}$$

- Dilling's rule

$$\frac{\text{Age (in years)}}{20} \times \text{adult dose} = \text{child's dose}$$

- Cowling's rule

$$\frac{\text{Age (on next birthday)}}{24} \times \text{adult dose} = \text{child's dose}$$

- Bastedo's rule

$$\frac{\text{Age in years} + 3}{30} \times \text{adult dose} = \text{child's dose}$$

May be photocopied for student use.

Basic Math Skills

- Equality

Equality is a basic mathematical concept. An equal sign (=) indicates that the numbers on each side of the equal sign have the same value.

EXAMPLE:

$$\begin{array}{l} 1 + 1 = 2 \\ 3 - 1 = 2 \\ 1 \times 2 = 2 \\ 4 \div 2 = 2 \end{array}$$

If all of the statements to the left of the equal sign equal two, then all of the statements are equal to each other as well.

$1 + 1 = 3 - 1 = 1 \times 2 = 4 \div 2 = 2$

- Addition

Addition is the process used to find the sum of two or more numbers. When giving medications, you may be required to add two amounts together. The symbol used to indicate addition is the plus sign (+).

☑ **NOTE:** When adding, it is helpful to place the numbers in columns instead of writing them across the page. Be sure to place each number in its correct position to avoid confusion when adding.

EXAMPLE: $672 + 12 + 3 + 1477 = 2164$

$$\begin{array}{r} 672 \\ 12 \\ 3 \\ \underline{+\ 1477} \\ 2164 \end{array}$$

May be photocopied for student use.

- Subtraction

Subtraction is the process of determining the amount remaining when a specified amount is taken away from a number. Like addition, this skill is also used when determining dosage amounts or amounts of a medication available. The symbol used to indicate subtraction is the minus sign (–). In pharmacology, subtraction usually involves only two numbers.

☑ **NOTE:** When subtracting, it is helpful to place the numbers in columns instead of writing them across the page. Be sure to place each number in its correct position to avoid confusion when subtracting.

EXAMPLE:

$26 - 12 = 14$

$$\begin{array}{r} 26 \\ \underline{-12} \\ 14 \end{array}$$

- Multiplication

Multiplication is the process of combining a number with itself a specified number of times. The symbol used to indicate multiplication is (×) or a dot (·). Another way to indicate multiplication is a number immediately preceding a number in parentheses.

EXAMPLE:

$2 \times 4 = 8$

$2 \cdot 4 = 8$

$2(4) = 8$

$2 \times 4 = 2 \cdot 4 = 2\,(4) = 8$

- Division

Division is the process of separating a number into a specified number of equal portions. Division is frequently used in pharmacology. The symbols for division are (÷) and (/). Another indication of division is to place a number in fraction form or to place one number beside another number with a diagonal line between them.

EXAMPLES:

$8 \div 2 = 4$

$\frac{8}{2} = 4$

$^{8}/_{2} = 4$

$8 \div 2 = \frac{8}{2} = {}^{8}/_{2} = 4$

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Before dividing a number, you must first determine which of the two numbers is the *divisor*. The divisor is the "divided by" part of an equation. For example, if 3 were the divisor in $^{21}/_{3}$, 21 would be divided into 3 parts of 7 each. To determine the divisor, read the equation aloud. In this example, $^{21}/_{3}$ would read "twenty-one divided by three." The number following "divided by" is always the divisor. Examples of how each division equation should be read are listed below.

EXAMPLES:

$8 \div 2$	Eight divided by two
$\frac{8}{2}$	Eight divided by two
$^{8}/_{2}$	Eight divided by two

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Calculating With Fractions

WORDS YOU SHOULD KNOW	
denominator	the part of a fraction that indicates how many equal parts another number is divided into; the bottom or right half of a fraction
fraction stated in lowest terms	a mixed or proper fraction in which the numerator and the denominator cannot be divided by a common number EXAMPLE: ¼
improper fraction	a fraction in which the numerator is greater than or equal to the denominator EXAMPLE: $^3/_2$
lowest common denominator	in a group of fractions, the lowest number that can be evenly divided by *all* denominators (also known as *LCD*) EXAMPLE: $^2/_3$, $^1/_6$, $^3/_4$ - lowest common denominator = 12
mixed fraction	a whole number and a fraction EXAMPLE: 3 ¾
numerator	the part of a fraction that is being divided; the top or left half of the fraction
proper fraction	a fraction in which the numerator is less than the denominator EXAMPLE: $^{62}/_{75}$
reduce	to convert a fraction to its lowest terms

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You will use fractions often when calculating medication dosages. The parts of a fraction and the different types of fractions are listed below.

☑ NOTE: Fractions may be written in the following ways:

$\frac{\text{numerator}}{\text{denominator}}$ numerator/denominator $^{\text{numerator}}/_{\text{denominator}}$

☑ **NOTE:** Any fraction with the same number in both the numerator and the denominator equals 1.

- Reducing to lowest terms

You will often need to reduce fractions to their lowest terms before or after you perform your calculation. The fraction $^4/_6$ can be reduced to its lowest terms by dividing the numerator and the denominator by 2.

$\underline{4}$ divided by 2 = $\underline{2}$
6 divided by 2 = 3

Both $^4/_6$ and $^2/_3$ represent the same amount, but $^2/_3$ states the amount in the lowest terms.

- Adding fractions

Use the following steps to add fractions

1. Find the lowest common denominator of all the fractions (convert mixed fractions to improper fractions first)
2. Change all fractions to the same denominator and adjust the numerators using the LCD
3. Add the numerators (leave the denominators the same)
4. Reduce to lowest terms

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EXAMPLE:

2/3 + 3/4 + 5/6 = ?

1. Determine the lowest common denominator for these three fractions. The smallest number that all the denominators (3, 4, and 6) can be evenly divided into is 12. Divide 12 by each denominator. You will use this number to convert the numerator.

   12/3 = 4

   12/4 = 3

   12/6 = 2

2. Now, change all the denominators in the fractions to 12. At the same time, multiply the numerators by the products you determined in step 1.

   $\frac{2}{3}$ (12/3 = 4) 4 x 2 = $\frac{8}{12}$

   $\frac{3}{4}$ (12/4 = 3) 3 x 3 = $\frac{9}{12}$

   $\frac{5}{6}$ (12/6 = 2) 2 x 5 = $\frac{10}{12}$

   ☑ **NOTE:** $^{8}/_{12}$ is the same as $^{2}/_{3}$ ($^{2}/_{3}$ is $^{8}/_{12}$ reduced to its lowest terms).

3. Add the numerators of each fraction together. Do not add the denominators — they remain the same.

   $$\frac{8}{12} + \frac{9}{12} + \frac{10}{12} = \frac{27}{12}$$

4. Reduce the fraction to the lowest terms.

   $$\frac{27 \text{ divided by } 3 =}{12 \text{ divided by } 3 =} \frac{9}{4} = {}^{9}/_{4}\text{, or } 2\tfrac{1}{4}$$

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- Subtracting fractions

The process for subtracting fractions is similar to adding fractions. Use the following steps to subtract fractions

1. Find the lowest common denominator
2. Change all fractions to the same denominator using the LCD
3. Subtract the second numerator from the first
4. Reduce to lowest terms

- Multiplying fractions

Use the following steps to multiply fractions.

1. Reduce to lowest terms
2. Multiply numerators
3. Multiply denominators
4. Reduce to lowest terms again if needed

EXAMPLE:

$^{3}/_{12} \times {}^{10}/_{25}$

1. Reduce to lowest terms

$$\frac{3 \text{ divided by } 3}{12 \text{ divided by } 3} = \frac{1}{4} \qquad \frac{10 \text{ divided by } 5}{25 \text{ divided by } 5} = \frac{2}{5}$$

2. Multiply numerators

$$\frac{1}{4} \times \frac{2}{5} = \underline{2}$$

3. Multiply denominators

$$\frac{1}{4} \times \frac{2}{5} = \frac{2}{20}$$

4. Reduce to lowest terms

$$\frac{2 \text{ divided by } 2}{20 \text{ divided by } 2} = \frac{1}{10}$$

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- Dividing fractions

Use the following steps to divide fractions.

1. Invert the second fraction (switch numerator and denominator)
2. Multiply the two fractions (follow steps for multiplying fractions)

EXAMPLE:

$$\frac{2}{3} \div \frac{3}{4}$$

1. Invert the second fraction

$$\frac{2}{3} \ \frac{4}{3}$$

2. Multiply the numerators

$$\frac{2}{3} \times \frac{4}{3} = 8$$

3. Multiply the denominators

$$\begin{array}{ccccc} 2 & & 4 & = & 8 \\ \hline 3 & \times & 3 & = & 9 \end{array}$$

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Calculating With Decimals

In pharmacology, there is an ever increasing use of the metric system and, therefore, an increase in the use of decimals. Decimals are a continuation of the tens system in Arabic numbers. Like whole numbers, each decimal column has a value, and each column can contain numbers ranging from 0-9. **For clarification, decimal numbers that are not part of a whole number should always have a zero placed to the left of the decimal (0.92).**

- Adding decimals

  Adding decimals is the same as adding whole numbers. Be sure to place each number in its correct column and place all decimals one above the other.

  EXAMPLE: 12.34 + 0.033 + 146.9 = 159.273

$$\begin{array}{r} 12.34 \\ 0.033 \\ +\ 146.9 \\ 159.273 \end{array}$$

☑ **NOTE:** You can add zeros to the right of a number to hold additional places. For example, 12.34 could be written 12.340 in order to have the same number of places as the number following it, 0.033.

- Subtracting decimals

  When subtracting using decimals, it is important to keep the numbers in their correct columns. You should also place zeros where necessary to hold column places.

  EXAMPLE: 1.8 - 0.075 = 1.725

$$\begin{array}{r} 1.800 \\ \underline{-\ 0.075} \\ 1.725 \end{array}$$

- Multiplying decimals

  When multiplying decimals, start with the same process you use to multiplying whole numbers. After you have multiplied, there are two additional steps. First, add the total number of decimal places in the numbers being multiplied. Then, in your answer, place the decimal point that many places to the left of the end of the number.

  EXAMPLE: 2.35 x 1.03 = 2.4205

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Four decimal places can be found in the two numbers being multiplied above. Therefore, the decimal is placed to the left of the fourth number from the end of the answer.

- Dividing decimals

To divide decimal numbers, you must set up the numbers using the long division sign. Once the numbers have been set up in this format, remove the decimals from the divisor (the number to the left of the long division sign.) If the divisor contains decimals, move the decimal to the right as many places as necessary to remove the decimal from the number. Then move the decimal in the dividend (the number under the long division sign) the same number of placess to the right. Once you have moved this decimal in the dividend, write a decimal point immediately above it in the answer space. This will insure that you don't forget to place the decimal in your answer. If a smaller number is being divided by a larger number, move the decimal as shown above, and use zeros to hold the place.

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LAP SHEET

DOCUMENTING MEDICATIONS

2

Check the blank as you complete each step.

1. **Take** ___ the pretest provided by your instructor. Have your instructor evaluate your completed test. After your test has been evaluated, follow your instructor's recommendations.

2. **Read** ___ the introduction, unit objective, and specific objectives.

3. **Do** ___ the focus assignments.

4. **Stop** ___ and have your instructor evaluate your work from the focus assignment. After your work has been evaluated, follow your instructor's recommendations.

5. **Study** ___ the Information Sheets, objective 1.

6. **Review** ___ the symbols you are familiar with.

7. **Study** ___ examples of orders to show how abbreviations are used.

8. **Ask** ___ your instructor to discuss routine times for administration of medications and how they may differ.

Optional Study ___ examples of unclear use of abbreviations.

Optional Practice ___ using abbreviations by playing games with other students.

9. **Do** ___ Assignment Sheet 1.

10. **Stop** ___ and have your instructor evaluate your work from Assignment Sheet 1. After your work has been evaluated, follow your instructor's recommendations.

11. **Study** ___ the Information Sheets, objective 3.

12. **Ask** ___ your instructor to discuss various methods used to order medications, different types of pharmacies used by facilities, and the importance of signing for controlled substances.

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13. Study ____ the Information Sheets, objective 4.

14. Ask ____ your instructor to briefly discuss the use of the five rights.

15. Ask ____ your instructor to discuss why medications would be held in your local facility and implications that would follow if the reason for a hold on medication is not charted.

Optional Work ____ in groups to determine the variables of each route and what would need to be documented.

Optional Design ____ a form that would meet the nurse's needs when documenting the administration of medications.

Optional Record ____ the medications of one patient for one day on a form from a local facility.

Optional Write ____ the patient teaching that would be necessary for a fictitious patient.

Optional Practice ____ patient teaching by role-playing with other students.

16. Study ____ the Information Sheets, objective 5.

17. Ask ____ your instructor to discuss each of the common types of physician's orders and the practical nurse's role and responsibility for each one.

18. Ask ____ your instructor to discuss why the recording of the route in stat and prn (stat and one-time) orders differs.

Optional Identify ____ patients you have observed that would have been charted for prn medications. Write how you would have documented this information.

19. Do ____ Assignment Sheet 2. Your instructor will provide a documentation form for your use.

20. Stop ____ and have your instructor evaluate your work from Assignment Sheet 2. After your work has been evaluated, follow your instructor's recommendations.

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21. Study	___	the Information Sheets, objective 7.
22. Ask	___	your instructor to discuss legibility and the essential parts of the medication order.
23. Study	___	the format of the local nursing Kardex and medication card/system used.
Optional Practice	___	reading hand-written orders by working with other students.
Optional Practice	___	interpreting orders written by local physicians.
Optional Write	___	an evaluation of two systems of documentation, including which one would be easier to maintain and why.
Optional Practice	___	asking a physician or pharmacist for clarification of orders by role-playing with other students.
24. Do	___	Assignment Sheet 3. Your instructor will provide a physician's medication order.
25. Stop	___	and have your instructor evaluate your work from Assignment Sheet 3. After your work has been evaluated, follow your instructor's recommendations.
26. Study	___	the Information Sheets, objective 9.
27. Ask	___	your instructor to demonstrate the use of the format your local facility uses to document a medication history.
Optional Write	___	your own medication history.
Optional Practice	___	taking a medication history by role-playing with other students.
Optional Study	___	other medication history forms.
28. Do	___	Assignment Sheet 4. Role-play with other students or interview patients in clinical practice.

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29. Stop	___	and have your instructor evaluate your work from Assignment Sheet 4. After your work has been evaluated, follow your instructor's recommendations.
30. Study	___	the Information Sheets, objective 11.
31. Ask	___	your instructor to discuss how verbal and telephone orders are used, how this practice relates to students, and how and when to refuse a verbal or telephone order.
32. Do	___	Assignment Sheet 5. Your instructor will provide a physician's order sheet and will read orders to you or provide a tape of verbal orders.
33. Stop	___	and have your instructor evaluate your work from Assignment Sheet 5. After your work has been evaluated, follow your instructor's recommendations.
34. Study	___	the Information Sheets, objective 13.
35. Ask	___	your instructor to discuss why wastage of controlled substances occurs and how double-checking helps avoid illegal use of controlled substances.
Optional Study	___	sample forms used in local facilities.
36. Do	___	Assignment Sheet 6.
37. Stop	___	and have your instructor evaluate your work from Assignment Sheet 6. After your work has been evaluated, follow your instructor's recommendations.
38. Ask	___	your instructor to demonstrate the guidelines and procedures in the Job Sheet. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.
39. Practice	___	the procedures demonstrated by your instructor. Use the Job Sheet as a guide.
40. Stop	___	and have your instructor evaluate your work from the Job Sheet. After your work has been evaluated, follow your instructor's recommendations.

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41. Take — the posttest provided by your instructor. Have your instructor evaluate your completed test. After your test has been evaluated, follow your instructor's recommendations.

May be photocopied for student use.

WRITTEN TEST

DOCUMENTING MEDICATIONS

2

Name ______________________________ Score __________

OBJECTIVE 1

Match common symbols and abbreviations used in the documentation of the administration of medication to their correct meanings. Write the letter of the correct answer in the blanks provided.

_____ 1. by means of

_____ 2. capsule

_____ 3. immediately

_____ 4. every other day

_____ 5. four times a day

_____ 6. normal saline

_____ 7. left eye

_____ 8. of each

_____ 9. label

_____ 10. right eye

A. cap
B. NS
C. OD
D. sig
E. stat
F. aa
G. /
H. qid
I. OS
J. qod
K. dram
L. u
M. tid
N. aq
O. sol
P. fl

OBJECTIVE 2

Evaluated on Assignment Sheet 1.

May be photocopied for student use.

OBJECTIVE 3

Identify the documentation necessary when obtaining a medication. Write an "X" in the blank before each required part of a medication order.

____ 1. patient's full name

____ 2. patient's room number

____ 3. drug name

____ 4. date and time of order

____ 5. acceptable generic substitute

____ 6. time and/or frequency of administration

____ 7. patient's address

____ 8. drug dosage

____ 9. route of administration

____ 10. patient response

____ 11. special instructions, if necessary

____ 12. physician's signature

____ 13. instructions for refill

OBJECTIVE 4

Identify the documentation necessary when giving a medication. Write an "X" in the blank before each required documentation.

____ 1. patient teaching

____ 2. date and time of order

____ 3. signature of person administering medication

____ 4. specific location of injections

____ 5. signature of physician

____ 6. medication that is ordered and not given

____ 7. wastage, if any

____ 8. effects or absence of effects of medication

May be photocopied for student use.

OBJECTIVE 5

Match systems of giving medications with their definitions. Write the letter of the correct answer in the blank provided.

A. routine
B. amt
C. prn
D. one-time
E. stat
F. standing
G. self-terminating
H. bid
I. special

_____ 1. medication which must be administered immediately

_____ 2. instructions for a specific treatment or medication to be administered and not repeated

_____ 3. an order that includes a specific time frame or number of doses to be administered

_____ 4. an order to be given based on the patient's need

_____ 5. medication that is to be given to the patient regularly

_____ 6. any order that provides standard protocol for possible or commonly occurring events in patient care

OBJECTIVE 6

Evaluated on Assignment Sheet 2.

May be photocopied for student use.

OBJECTIVE 7

Identify steps necessary to transcribe medication orders. Write an "X" in the blank before each step necessary to transcribe medication orders.

_____ 1. Receive the chart with the medication order from the physician.

_____ 2. Have the physician sign the transcribed orders within 24 hours.

_____ 3. Check off the order on the physician's order sheet.

_____ 4. Document orders onto the Kardex, medication sheets, or cards.

_____ 5. Document teaching goals on the Kardex or chart.

_____ 6. Call the physician to confirm the orders.

_____ 7. Read through the orders.

_____ 8. Check each order for the patient's name, drug name, dosage, route of administration, and time and/or frequency of administration.

_____ 9. Document wastage, if any.

_____ 10. Check transcribed orders against the physician's orders for accuracy (or have RN check, according to facility policy.)

_____ 11. Destroy original medication order.

_____ 11. When all orders have been transcribed, place "noted," the date, the time, and your signature after each set of orders.

OBJECTIVE 8

Evaluated on Assignment Sheet 3.

May be photocopied for student use.

OBJECTIVE 9

Identify assessment data to be included in a medication history. Write an "X" in the blank before each item that should be included in a medication history.

____ 1. teaching goals

____ 2. routine of home administration

____ 3. effects or absence of effects of medication

____ 4. patient's dietary habits

____ 5. outline of the patient's understanding of present medications

____ 6. medications the patient has been taking

____ 7. medication that is ordered and not given

____ 8. patient allergies

OBJECTIVE 10

Evaluated on Assignment Sheet 4.

OBJECTIVE 11

Identify documentation requirements for verbal and telephone orders. Write an "X" in the blank before each documentation requirement for verbal and telephone orders.

____ 1. Have the physician co-sign the order within 24 hours.

____ 2. Document any wastage.

____ 3. Document all appropriate information about the administration.

____ 4. Write down the order exactly as heard.

____ 5. Check transcribed orders against physician's orders for accuracy (or have RN check, according to facility policy.

____ 6. Check off the order on the physician's order sheet.

____ 7. Make sure the order has complete information for administration, including the time and date ordered.

____ 8. Repeat the order back to the physician.

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OBJECTIVE 12 **Evaluated on Assignment Sheet 5.**

OBJECTIVE 13 **Identify documentation requirements of storage, use, and waste of controlled substances.** Write an "X" in the blank before each requirement.

_____ 1. medication

_____ 2. date and time

_____ 3. patient

_____ 4. room number

_____ 5. route of administration

_____ 6. amount

_____ 7. person ordering

_____ 8. specific location of injections

_____ 9. wastage, if any

_____ 10. medication that is ordered and not given

_____ 11. number remaining in the container

_____ 12. person administering

OBJECTIVE 14 **Evaluated on Assignment Sheet 6.**

OBJECTIVE 15 **Evaluated on Job Sheet.**

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DOCUMENTATION GUIDELINES

Correctly documenting medications is vital to ensuring that patients receive safe, effective care. But documentation also protects *you*. As a practical nurse, you could be sued for malpractice or negligence if you do not carry out your patient care responsibilities. Following these guidelines can protect you and your patient.

- Write legibly. If your co-workers cannot read your notes, they cannot tell what care your patient has received. If a jury thinks your notes are careless and sloppy, they may assume your patient care is also careless and sloppy.

- Be complete. Document all aspects of medication administration, including injection site.

- Be prompt, but not premature. Document patient care as soon as possible, but never document anything before you do it.

- Follow your facility's procedures for making late entries or correcting errors. Don't use correction fluid or a marker to cover mistakes; it could look like you have something to hide.

- Be objective and descriptive. For example, if a patient refuses to give a medication history, don't note that the patient was "stubborn" or "suspicious." Instead, let the facts speak for themselves.

  Example: Asked Mr. Jones for a list of current medications. He said "it's none of your business."

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LAP
SHEET

IDENTIFYING CLASSIFICATION AND EFFECTS OF MEDICATIONS

3

Check the blank as you complete each step.

1. **Take** ___ the pretest provided by your instructor. Have your instructor evaluate your completed test. After your test has been evaluated, follow your instructor's recommendations.

2. **Read** ___ the introduction, unit objective, and specific objectives.

3. **Do** ___ the focus assignments.

4. **Stop** ___ and have your instructor evaluate your work from the focus assignment. After your work has been evaluated, follow your instructor's recommendations.

5. **Study** ___ the Information Sheets, objective 1.

6. **Ask** ___ your instructor to give examples of drugs and their classifications.

7. **Study** ___ the Information Sheets, objective 2.

8. **Write** ___ an example of a particular drug used for each purpose listed.

Optional: Ask ___ your instructor to discuss new drugs being developed and the research involved in seeking a drug for a particular purpose.

Optional: Ask ___ your instructor about diseases from the past that are being controlled by drugs today.

9. **Study** ___ the Information Sheets, objective 3.

10. **Ask** ___ your instructor to provide examples of local and systemic effects and discuss the relationship among systemic effects, therapeutic effects, and side effects.

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11. Ask	___	your instructor to discuss the drugs which are given in the local facility using load (initial) doses of medication.
Optional: Study	___	patients' charts for blood levels of medications such as digoxin or theophylline.
Optional: Observe	___	the effects of initiating a new medication on a patient.
12. Study	___	the Information Sheets, objectives 4-8.
13. Ask	___	your instructor to review the information chart.
14. Practice	___	drilling yourself (or with other students) on the information in the chart.
Optional Play	___	trivia games using the information in the chart.
15. Study	___	the Information Sheets, objective 9.
Optional Study	___	patients in the clinical area to determine factors which influence medication selection.
Optional Find	___	examples of different drugs that might be given to patients with the same indications but different patient assessment data.
Optional Choose	___	medications for a patient (ask your instructor to provide information about particular needs and limitations).
16. Do	___	Assignment Sheet 1.
Optional Ask	___	your instructor for the names of drugs used in your local facility.
Optional Practice	___	quizzing with another student on generic and trade names.
Optional Ask	___	your instructor about unusual additives that may make differences in the listing of a generic drug.

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17. Stop	___	and have your instructor evaluate your work from the Assignment Sheet. After your work has been evaluated, follow your instructor's recommendations.
18. Review	___	patient and drug factors to be considered from objective 9.
19. Do	___	Assignment Sheet 2.
Optional Role play	___	delivery of information with another student.
20. Stop	___	and have your instructor evaluate your work from the Assignment Sheet. After your work has been evaluated, follow your instructor's recommendations.
21. Take	___	the posttest provided by your instructor. Have your instructor evaluate your completed test. After your test has been evaluated, follow your instructor's recommendations.

May be photocopied for student use.

WRITTEN TEST

IDENTIFYING CLASSIFICATION AND EFFECTS OF MEDICATIONS

3

Name ______________________________ Score __________

OBJECTIVE 1

Identify ways drugs are classified. Write an "X" in the blank before each way that drugs are classified.

____ 1. form of drug preparation
____ 2. systemic or local
____ 3. generic or trade name
____ 4. principal action on the body
____ 5. method of obtaining drug
____ 6. specific disease or disorder
____ 7. specific organ or body system acted on

OBJECTIVE 2

Identify general purposes for which medications are given to patients. Write an "X" in the blank before each purpose for which medications are given to patients.

____ 1. antibiotic
____ 2. diagnosis
____ 3. prevention
____ 4. systemic
____ 5. treatment of symptoms
____ 6. examination
____ 7. replacement
____ 8. cure

OBJECTIVE 3

Differentiate between systemic and local effects of medications. Write an "S" in the blank before the definition of a systemic effect. Write an "L" in the blank before the definition of a local effect.

____ Regardless of where the medication enters the body, it affects the whole body.

____ The medication's effect is limited only to the area where it is administered.

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OBJECTIVE 4

Identify therapeutic effects of the most common classes of medications. Write the letters of the correct answers in the blanks provided.

____ 1. Which classification of drug promotes evacuation of the intestine?

a. androgens
b. keratolytics
c. laxatives
d. vasodilators

____ 2. Which classification of drug is not an antibiotic?

a. cholinergic
b. chloramphenicol
c. erythromycin
d. tetracycline

____ 3. Which classification of drug is used to lower blood sugar?

a. antithyroid
b. glycoside
c. hypoglycemic
d. diuretic

____ 4. Which classification of drug is used to prevent vomiting?

a. antiemetic
b. emetic
c. antiflatulent
d. anticonvulsant

____ 5. Which classification of drug mimics the sympathetic nervous system?

a. anesthetic
b. adrenergic
c. somatotropin
d. cholinergic

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____ 6. Which classification of drug treats parasitic infestations?

a. antihelmintic
b. pediculicide
c. scabicide
d. all of the above

____ 7. Anesthetics are used to

a. alter perception of pain
b. inhibit the sympathetic nervous system
c. mimic the parasympathetic nervous system
d. produce loss of sensation, muscle relaxation, loss of consciousness

____ 8. Diuretics are used to

a. induce vomiting
b. increase urine output
c. dilate peripheral vessels
d. promote evacuation of the intestine

____ 9. Expectorants are used to

a. combine with water to increase excretion
b. decrease inflammation
c. increase pulmonary secretion
d. increase sodium and water excretion

____ 10. Which classification of drug is used to relieve itching?

a. antineoplastic
b. antipruritic
c. antipyretic
d. antitussive

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OBJECTIVE 5

Identify side effects of the common classifications of medications. Write the letters of the correct answer in the blank.

____ 1. A possible side effect of many anti-infective agents (antibiotics) is

a. superinfection
b. kidney dysfunction
c. GI distress
d. hypotension

____ 2. A side effect of calcium channel blockers and beta-adrenergic blockers is:

a. hypotension
b. tachycardia
c. diarrhea
d. renal calculi

____ 3. Gynecomastia in males and development of male characteristics in females are side effects of

a. adrenal corticosteroids
b. adrenergics
c. aminoglycosides
d. androgens

____ 4. Prolonged bleeding time is a side effect of

a. antacids and antiflatulents
b. antitussives and expectorants
c. salicylates and ibuprofen
d. tricyclics and MAO inhibitors

____ 5. Hair loss is a side effect of

a. antineoplastic agents
b. beta-adrenergic blockers
c. cholinergic blockers
d. narcotic antagonists

____ 6. Side effects of thyroid agents include

a. drowsiness, weakness, confusion
b. fever, weight loss, menstrual irregularities
c. hypoglycemia, irritability, tremors
d. nervousness, tachycardia, changes in B/P

May be photocopied for student use.

____ 7. Side effects of narcotic analgesics include

a. insomnia, sexual dysfunction
b. liver toxicity, rash
c. prolonged bleeding time, ulceration
d. sedation, confusion

____ 8. Side effects of antihistamines include

a. drying of secretions, sedation
b. respiratory depression, constipation
c. tremors, angina
d. vertigo, dry mouth

____ 9. Side effects of antiulcer agents include

a. sedation, vertigo, dry mouth
b. constipation, tinnitus, nervousness
c. diarrhea, dizziness, confusion
d. rash, GI distress, fever

____ 10. Anaphylaxis is a side effect of

a. erythromycins
b. aminoglycosides
c. penicillins
d. sulfonamides

OBJECTIVE 6

Identify contraindications of the common classifications of medications. Write the letters of the correct answers in the blanks provided.

____ 1. Contraindications for salicylates include

a. angina
b. GI ulcer or bleeding
c. hypotension
d. kidney and liver disease

____ 2. Androgens should not be given to

a. people with asthma or COPD
b. people with epilepsy
c. pregnant women
d. prepubertal males

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_____ 3. People who are allergic to penicillin should not be given

a. aminoglycosides
b. cephalosporins
c. erythromycins
d. tetracyclines

_____ 4. Contraindications for use of emetics include

a. ingestion of corrosive substances
b. peptic ulcer
c. pregnancy
d. undiagnosed abdominal pain

_____ 5. Children with viral infections should not be given

a. antidiarrhea agents
b. narcotic analgesics
c. non-steroidal anti-inflammatory drugs
d. penicillins

_____ 6. Pregnancy is a contraindication for all of the following **except**

a. antianxiety agents
b. antineoplastic agents
c. progestines
d. antituberculosis agents

_____ 7. People taking ________ should avoid exposure to sunlight.

a. adrenal corticosteroids
b. MAO inhibitors
c. tetracyclines
d. thyroid agents

_____ 8. Contraindications for use of estrogens include

a. anemia
b. hypothyroidism
c. IDDM
d. stroke

May be photocopied for student use.

_____ 9. Contraindications for use of sedatives and hypnotics include

a. heart disease
b. prolonged use
c. stroke
d. uric kidney stones

_____ 10. GI disorders, kidney and liver dysfunction, and blood dyscrasias are contraindications for use of

a. anticoagulants
b. antidepressants
c. antihelmintics
d. antitussives

OBJECTIVE 7

Identify common drugs within each classification of medication. Write the letters of the correct answers in the blanks provided.

_____ 1. Which classification includes epinephrine and dopamine?

a. cholinergics
b. anesthetics
c. adrenergics
d. sedatives

_____ 2. Which classification includes nystatin?

a. antibiotic
b. antiviral
c. antifungal
d. antiseptic

_____ 3. Ibuprofen and indomethacin are included in which classification?

a. aminoglycosides
b. beta-adrenergic blockers
c. diuretics
d. non-steroidal anti-inflammatory drugs

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____ 4. Examples of narcotic analgesics include

a. acetaminophen and ibuprofen
b. codeine and morphine
c. aspirin and naproxin
d. phenylbutazone and lidocaine

____ 5. Examples of antiulcer agents include

a. bethanecol and neostigmine
b. diazepam and methocarbamol
c. promethazine and dimenhydrinate
d. ranitidine and cimetidine

____ 6. Which classification includes coumadin and heparin?

a. anticoagulants
b. anticonvulsants
c. antidiarrhea agents
d. antiemetics

____ 7. Which classification includes isoniazid and ethambutol?

a. cephalosporins
b. antifungals
c. antituberculosis
d. urinary anti-infectives

____ 8. Digoxin and digitoxin are examples of

a. calcium channel blockers
b. cardiac glycosides
c. coronary vasodilators
d. diuretics

____ 9. DPT and MMR are examples of

a. emollients and demulcents
b. serums
c. vaccines
d. vitamins and minerals

____ 10. Different types of insulin include

a. regular, NPH, and ultralente
b. human, A&D, and glucoside
c. standard, NPO, and extra-strength
d. pork, TOPV, and senna

May be photocopied for student use.

OBJECTIVE 8

Identify the nursing actions for common classifications of medications. Write the letters of the correct answers in the blanks provided.

____ 1. Your patient is scheduled to receive a narcotic analgesic. Before administering the medication, you would

a. check blood pressure
b. discuss rebound effect
c. monitor respiration
d. take apical pulse

____ 2. Part of your nursing action for a patient taking MAO inhibitors is to tell the patient to

a. avoid dairy food, iron, and antacids for 3 hours
b. increase fluid intake
c. take on a full stomach
d. watch for drug and food interactions

____ 3. Your patient has been given an antianxiety agent. You should caution this patient about

a. inadequate fluid intake
b. operating machinery
c. side effects
d. using OTC drugs

____ 4. Your patient has been given a beta-adrenergic blocker. As part of your nursing actions for this patient, you should:

a. add cultured dairy products to diet
b. give with full glass of water
c. monitor heart rate
d. withhold potassium foods

____ 5. The physician has ordered an anti-inflammatory agent for your patient. You should:

a. give on an empty stomach
b. give with food
c. stress large amounts of fluid
d. watch for drug and food interactions

May be photocopied for student use.

____ 6. You have just administered tetracycline to a patient. This patient should avoid ____________ for the next three hours.

a. cultured dairy products
b. dairy food, iron, and antacids
c. foods with tyramine
d. potassium foods

____ 7. When administering antiviral medications, you should

a. apply with finger cot or glove
b. cover affected area with warm compress
c. recheck for parasite
d. watch for allergic reaction

____ 8. Nursing actions for a patient taking antituberculosis medication should include

a. caution about operating machinery
b. discuss importance of remaining on treatment
c. discuss rebound effect
d. warnings to patient of severe side effects

____ 9. Nursing actions for a patient taking nonthiazide diuretics should include

a. give potassium foods
b. encourage fluids
c. watch for tolerance
d. withhold dairy products

____ 10. Nursing actions for a patient taking coronary vasodilators should include

a. assist to rise slowly, monitor B/P
b. give after meals, increase fluid intake
c. instruct on diet, importance of regular dosage
d. prevent falls, watch for tolerance

May be photocopied for student use.

OBJECTIVE 9

Identify drug factors and patient assessment data which influence selection and administration of medication. Write an "X" in the blank before each drug factor or patient assessment data which influences selection and administration of medication.

____ 1. generic or trade name drug

____ 2. body size

____ 3. age

____ 4. patient's religious beliefs

____ 5. sex

____ 6. form of drug

____ 7. physiologic state

____ 8. method of excretion of the medication

____ 9. patient's belief in the effectiveness of the medication

____ 10. controlled substances

____ 11. route of availability of the medication

____ 12. dependability of medication's absorption into the system

____ 13. nursing actions for drug

____ 14. classification of drug

____ 15. method of distribution of the medication

____ 16. side effects

____ 17. method of obtaining drug

____ 18. contraindications

____ 19. principal action on the body

____ 20. effects of the medication

OBJECTIVE 10

Evaluated on Assignment Sheet 1

May be photocopied for student use.

OBJECTIVE 11 **Evaluated on Assignment Sheet 2**

May be photocopied for student use.

LAP
SHEET

ADMINISTERING MEDICATIONS

4

Check the blank as you complete each step.

1. **Take** ___ the pretest provided by your instructor. Have your instructor evaluate your completed test. After your test has been evaluated, follow your instructor's recommendations.

2. **Read** ___ the introduction, unit objective, and specific objectives.

3. **Do** ___ the focus assignments.

4. **Stop** ___ and have your instructor evaluate your work from the focus assignment. After your work has been evaluated, follow your instructor's recommendations.

5. **Study** ___ the Information Sheets, objective 1.

6. **Ask** ___ your instructor to discuss how assessment helps the average patient, as well as the patient with special needs.

Optional Discuss ___ with other students any past experience in giving medication to family members or yourself by any route.

Optional Write ___ a sample assessment on a patient that would meet the patient's medication administration needs.

7. **Study** ___ the Information Sheets, objective 2.

8. **Practice** ___ memorizing and reciting the five rights.

9. **Ask** ___ your instructor to discuss different methods of patient identification and explain why some are more accurate than others.

10. **Ask** ___ your instructor how often identification checks should be performed.

May be photocopied for student use

Optional Write ___ a short explanation of why these five pieces of documentation are called *rights* and why they could also be called the *five responsibilities.*

Optional Write ___ a short report on the value of one of the five rights.

Optional Practice ___ with other students role-playing situations in which the patient denies his or her identity.

11. Study ___ the Information Sheets, objective 3.

12. Ask ___ your instructor to demonstrate the technique of verification at three points and explain the reason for the three medication checkpoints.

13. Ask ___ your instructor to discuss the information on medication labels if you need more help understanding the label.

14. Study ___ the Information Sheets, objective 4.

Optional Ask ___ your instructor how medications are distributed in the local facility.

Optional Ask ___ your instructor to discuss the advantages and disadvantages of each of the systems of medication distribution.

15. Read ___ the Information Sheets, objectives 5-6.

16. Ask ___ your instructor to discuss the purpose for which each medication form is used.

Optional Ask ___ your instructor to show you samples of each of the forms of medication.

Optional Read ___ a drug reference book to determine the forms in which the most common medications are found.

Optional Ask ___ your instructor to show you different kinds of inhalers; read the different directions on each one.

May be photocopied for student use.

Optional Ask ___ your instructor to provide an ammonia inhalant and supervise you while you use it.

17. **Study** ___ the Information Sheets, objective 7.

18. **Ask** ___ your instructor to show you the transparency illustrating the parts of a syringe and needle.

19. **Label** ___ the illustration in your student workbook.

20. **Ask** ___ your instructor to check your work.

21. **Ask** ___ your instructor to show you sample syringes.

22. **Ask** ___ your instructor to show you which areas of the syringe you can touch and discuss the reasons for maintaining the sterility of particular areas of the syringe.

23. **Study** ___ the Information Sheets, objective 8.

24. **Ask** ___ your instructor to demonstrate loading cartridges commonly used in the local facility and discuss the safety precautions of the various cartridge syringes.

25. **Practice** ___ loading cartridges.

Optional Ask ___ your instructor to provide descriptions of patients who need a specific injection. Choose the syringe and needle that should be used for these patients.

Optional Ask ___ your instructor to discuss the advantages and disadvantages of cartridge systems.

Optional Ask ___ your instructor to show you common areas for injection on a mannequin.

Optional Practice ___ locating injection sites on other students.

Optional Ask ___ your instructor to discuss conditions under which particular injection sites should be avoided.

May be photocopied for student use.

26. **Study** ___ the Information Sheets, objectives 9-11.

27. **Ask** ___ your instructor to discuss the major sources of patient discomfort associated with an injection.

28. **Study** ___ the Information Sheets, objective 12.

29. **Ask** ___ your instructor how the developmental level of the child affects the methods used when administering medication.

30. **Ask** ___ your instructor to discuss or demonstrate devices or restraint methods used when administering medication to infants and children.

Optional Write ___ a short description and critique of techniques you have seen or used for administering medication to infants and children.

31. **Study** ___ the Information Sheets, objective 13.

32. **Ask** ___ your instructor to discuss documentation requirements for standing orders.

33. **Do** ___ Assignment Sheet 1.

34. **Stop** ___ and have your instructor evaluate your work from Assignment Sheet 1. After your work has been evaluated, follow your instructor's recommendations.

35. **Study** ___ the Information Sheets, objective 15.

36. **Ask** ___ your instructor to demonstrate the meniscus of different medications.

37. **Do** ___ Assignment Sheet 2.

38. **Stop** ___ and have your instructor evaluate your work from Assignment Sheet 2. After your work has been evaluated, follow your instructor's recommendations.

39. **Do** ___ Assignment Sheet 3.

Optional Practice ___ taking and administering medications by role-playing with other students.

May be photocopied for student use.

Optional Write ___ a short description (or discuss with other students) personal experiences about communication during medication administration.

40. **Stop** ___ and have your instructor evaluate your work from Assignment Sheet 2. After your work has been evaluated, follow your instructor's recommendations.

41. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 1. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

42. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

43. **Stop** ___ and have your instructor evaluate your work from Job Sheet 1. After your work has been evaluated, follow your instructor's recommendations.

44. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 2. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

45. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

46. **Stop** ___ and have your instructor evaluate your work from Job Sheet 2. After your work has been evaluated, follow your instructor's recommendations.

47. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 3. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

48. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

49. **Stop** ___ and have your instructor evaluate your work from Job Sheet 3. After your work has been evaluated, follow your instructor's recommendations.

50. **Ask** ___ your instructor to discuss buccal and sublingual medications used in the local facility.

May be photocopied for student use.

51. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 4. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

52. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

53. **Stop** ___ and have your instructor evaluate your work from Job Sheet 4. After your work has been evaluated, follow your instructor's recommendations.

54. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 5. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

55. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

56. **Stop** ___ and have your instructor evaluate your work from Job Sheet 5. After your work has been evaluated, follow your instructor's recommendations.

57. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 6. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

58. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

59. **Stop** ___ and have your instructor evaluate your work from Job Sheet 6. After your work has been evaluated, follow your instructor's recommendations.

60. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 7. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

61. **Ask** ___ your instructor to discuss the difference between adult and child ear medication administration and to demonstrate pulling the ear of a child and of an adult.

62. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

May be photocopied for student use.

63. **Stop** ___ and have your instructor evaluate your work from Job Sheet 7. After your work has been evaluated, follow your instructor's recommendations.

64. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 8. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

65. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

66. **Stop** ___ and have your instructor evaluate your work from Job Sheet 8. After your work has been evaluated, follow your instructor's recommendations.

67. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 9. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

68. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

69. **Stop** ___ and have your instructor evaluate your work from Job Sheet 9. After your work has been evaluated, follow your instructor's recommendations.

70. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 10. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

71. **Ask** ___ your instructor to identify medications that should not be crushed.

72. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

73. **Stop** ___ and have your instructor evaluate your work from Job Sheet 10. After your work has been evaluated, follow your instructor's recommendations.

74. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 11. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

May be photocopied for student use.

75. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

76. **Stop** ___ and have your instructor evaluate your work from Job Sheet 11. After your work has been evaluated, follow your instructor's recommendations.

77. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 12. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

78. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

79. **Stop** ___ and have your instructor evaluate your work from Job Sheet 12. After your work has been evaluated, follow your instructor's recommendations.

80. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 13. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

81. **Ask** ___ your instructor to discuss why procedures for administering insulin and heparin differ from other subcutaneous injections.

82. **Ask** ___ your instructor to discuss the method used when handling insulin, local policy about glucose levels, and the importance of patient teaching.

83. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

84. **Stop** ___ and have your instructor evaluate your work from Job Sheet 13. After your work has been evaluated, follow your instructor's recommendations.

85. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 14. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

86. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

May be photocopied for student use.

87. **Stop** ___ and have your instructor evaluate your work from Job Sheet 14. After your work has been evaluated, follow your instructor's recommendations.

88. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 15. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

89. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

90. **Stop** ___ and have your instructor evaluate your work from Job Sheet 15. After your work has been evaluated, follow your instructor's recommendations.

91. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 16. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

92. **Ask** ___ your instructor to discuss when the z-track method should be used.

93. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

94. **Stop** ___ and have your instructor evaluate your work from Job Sheet 16. After your work has been evaluated, follow your instructor's recommendations.

95. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 17. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

96. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

97. **Stop** ___ and have your instructor evaluate your work from Job Sheet 17. After your work has been evaluated, follow your instructor's recommendations.

98. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 18. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings. Your instructor will provide a medication interaction/compatibility chart.

May be photocopied for student use.

99. **Practice** ____ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

100. **Stop** ____ and have your instructor evaluate your work from Job Sheet 18. After your work has been evaluated, follow your instructor's recommendations.

101. **Ask** ____ your instructor to demonstrate the guidelines and procedures in Job Sheet 19. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

102. **Practice** ____ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

Optional List ____ the medications that are available in dry form.

103. **Stop** ____ and have your instructor evaluate your work from Job Sheet 19. After your work has been evaluated, follow your instructor's recommendations.

104. **Ask** ____ your instructor to demonstrate the guidelines and procedures in Job Sheet 20. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

105. **Ask** ____ your instructor to discuss patient privacy, handling of suppositories, indications for this form of medication, and patient teaching.

106. **Practice** ____ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

107. **Stop** ____ and have your instructor evaluate your work from Job Sheet 20. After your work has been evaluated, follow your instructor's recommendations.

108. **Ask** ____ your instructor to demonstrate the guidelines and procedures in Job Sheet 21. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

109. **Practice** ____ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

May be photocopied for student use.

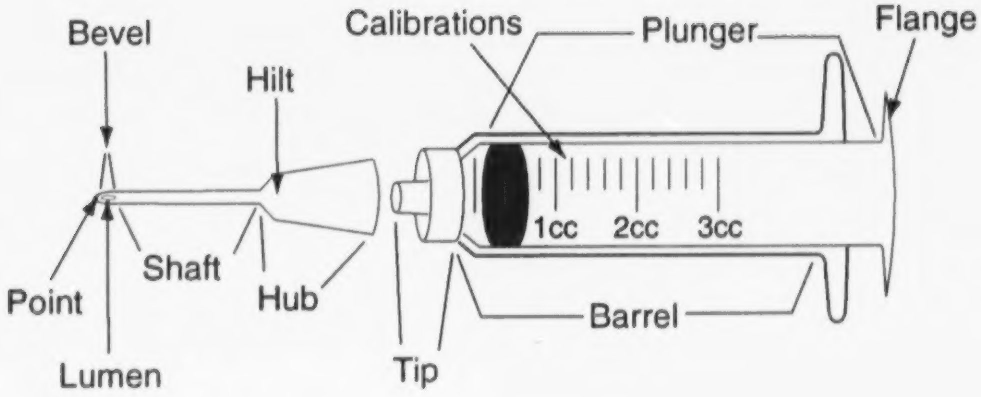
110. Stop ___ and have your instructor evaluate your work from Job Sheet 21. After your work has been evaluated, follow your instructor's recommendations.

111. Take ___ the posttest provided by your instructor. Have your instructor evaluate your completed test. After your test has been evaluated, follow your instructor's recommendations.

May be photocopied for student use.

TM

Parts of a Syringe


Bevel
Calibrations
Plunger
Flange
Hilt
1cc
2cc
3cc
Shaft
Point
Hub
Barrel
Lumen
Tip

May be photocopied for student use.

WRITTEN TEST

ADMINISTERING MEDICATIONS

4

Name ______________________ Score __________

OBJECTIVE 1

List patient assessment data to use before administering medication. List the patient assessment data to use in the blanks provided.

May be photocopied for student use.

OBJECTIVE 2

List the five rights of medication administration. List the five rights in the blanks provided.

____

____

____

____

____

OBJECTIVE 3

List steps to verify a medication during preparation. List the steps in the blanks provided.

____

____

____

OBJECTIVE 4

Identify various systems of medication distribution. Write the letter of the correct system of medication distribution in the blank.

____ 1. This system uses single-unit packages of drugs, which are dispensed to fill each dosage requirement as it is ordered. The individual packages are labeled and kept in an individual patient's drawer. The drawer is usually refilled every 24 hours.

A. floor stock system
B. individual prescription order system
C. unit dose system

____ 2. This system provides medications for several days for an individual patient. Changes are made by prescription. The medications for the individual patient are arranged together. This system is usually used in nursing homes or for home use.

A. floor stock system
B. individual prescription order system
C. unit dose system

May be photocopied for student use

____ 3. This system is most frequently found in smaller facilities. Medication is provided in larger quantities or stock medications, with the exception of dangerous or rare medications.

A. floor stock system
B. individual prescription order system
C. unit dose system

OBJECTIVE 5

Identify the various forms of medications. Write the letter of the correct answer in the blank.

Part 1

A. aqueous solution
B. buccal tablet
C. capsule
D. enteric-coated tablet
E. elixir (fluid extract)
F. emulsion
G. liniment
H. lotion
I. lozenge (troche)
J. solution
K. suspension
L. tablet
M. time-release (sustained-release) capsule
N. sublingual tablet
O. syrup

____ 1. disk of compressed dry drug that varies in shape; may be scored for division

____ 2. drug particles packaged in a gelatin container that dissolves after being swallowed

____ 3. tablet with special coating that is resistant to breakdown in the upper GI tract

____ 4. coated capsule, containing drug particles, that dissolves in a specified length of time

____ 5. flavored tablet for local effect on throat or mouth

____ 6. solid particles of medication that are mixed, not dissolved, in a liquid

____ 7. liquid medication that contains oils and fats in water

____ 8. liquid medication with an alcohol base

____ 9. liquid medication that is sweetened and flavored

____ 10. clear liquid medication in which the drug is evenly dissolved

May be photocopied for student use.

Part 2

A. ampule
B. buccal tablet
C. douche solution
D. enema solution
E. eye, ear, and nose drops
F. eye ointment
G. suppository
H. liniment
I. lotion
J. ointment
K. sublingual tablet
L. suspension
M. transdermal
N. vaginal cream
O. vaginal suppository

_____ 1. medicated "patch" applied to the skin; medication is absorbed over a period of time

_____ 2. semi-solid preparation of drug for external application

_____ 3. external application that acts as counterirritant

_____ 4. liquid preparation of drug for external application

_____ 5. liquid medication for administration into specified area

_____ 6. sterile semi-solid preparation for ophthalmic use only

_____ 7. medicated cream to be applied to the vagina with use of a special applicator

_____ 8. drug suspended in substance that melts at body temperature for local effect on vagina

_____ 9. sterile solution used to irrigate vaginal canal

_____ 10. tablet to be placed between the cheek and the gum

_____ 11. tablet to be placed under the tongue

May be photocopied for student use.

Part 3

A. ampule
B. aqueous solution
C. cartridge injectable
D. elixir (fluid extract)
E. enema solution
F. gas
G. ointment
H. powder
I. spray or mist
J. sublingual tablet
K. suppository
L. suspension
M. transdermal
N. vial
O. viscous solution

____ 1. drug suspended in a substance that melts at body temperature

____ 2. drug suspended in solution to be given as an enema

____ 3. liquid drug form to be inhaled as fine droplets from spray bottle or nebulizer

____ 4. anesthetic to be inhaled for general anesthesia

____ 5. powder form of drug administered through an inhaler

____ 6. small glass container that holds a single dose of sterile solution for injection

____ 7. drug is packaged in a glass single- or multi-dose container that is sealed with a rubber stopper

____ 8. single dose of drug in a glass container that fits into a particular syringe

____ 9. solution with a sterile water base

____ 10. solution with an oil base

OBJECTIVE 6

Select appropriate guidelines for administering medications other than injections. Write a "T" in the blank before each appropriate guideline for administering medications. Write an "F" in the blank before each false statement.

____ 1. Open unit dose oral medication when you put it in the patient's medication drawer or on the tray.

____ 2. When solid medication is kept in stock containers, first pour the number desired into the container's cap, then transfer them to the medicine cup.

May be photocopied for student use.

____ 3. When administering liquid medication, turn the label away from you as you pour the medication into the medicine cup.

____ 4. Do not crush enteric-coated tablets or timed-release capsules.

____ 5. When administering enteric-coated tablets through a nasogastric tube, place the whole tablet in the tube and use 30 cc of water to flush it through.

____ 6. When administering medication through a nasogastric tube, position the patient so the tube is against the wall of the stomach.

____ 7. After administering medication through a nasogastric tube, do not reattach continuous feeding for 30 minutes.

____ 8. When administering sublingual or buccal medications, instruct the patient not to chew or swallow the medication or touch it with the tongue.

____ 9. To aid dissolving, give small sips of water after administering sublingual or buccal medications.

____ 10. Wear gloves to apply skin medications.

____ 11. Unless otherwise specified, remove old topical medications before applying new medication.

____ 12. Use gauze to cover topical medications.

____ 13. Each patient must have their own bottle or tube of eye medication.

____ 14. Always irrigate the ear canal before administering an ear medication.

____ 15. Always administer ear medications at room temperature.

____ 16. When administering ear medications to children under 3 years old, pull the earlobe down and back.

____ 17. For nose drops, position the patient with the head tilted back. The patient should remain in this position for 20-30 minutes after the drops are instilled.

May be photocopied for student use.

_____ 18. Nasal spray is administered with the head erect and one nostril blocked.

_____ 19. Have the patient gently blow his or her nose after administering nasal spray.

_____ 20. To avoid holding a suppository, which will cause it to melt, place the package in a medicine cup.

_____ 21. When inserting a suppository, insert it about 1 inch past the internal rectal sphincter.

_____ 22. After administering a suppository, instruct the patient to remain in position for approximately 20 minutes.

_____ 23. Have the patient empty her bladder before administering a vaginal medication.

_____ 24. When administering a vaginal medication, position the patient in Sim's position.

_____ 25. After administering a vaginal medication, have the patient remain in position for 10 minutes with a perineal pad underneath her to be available for any drainage.

_____ 26. Warm oral medication in your hands before giving it to the patient.

_____ 27. You may have to crush medications for patients who are unable to take solid forms of oral medication.

_____ 28. If the patient is being fed through a nasogastric tube, you do not need to check tube placement before administering medication through the tube.

_____ 29. When giving sublingual or buccal medications, instruct the patient not to smoke until the medication is dissolved.

_____ 30. For safe administration, crushed medications can be combined with substances such as ice cream, sherbet, applesauce, water, and juice.

_____ 31. When giving oral medications, use your gloved fingers to take tablets or capsules from the medicine cup and place them in the patient's mouth.

May be photocopied for student use.

____ 32. When applying medications to burns, use clean technique.

____ 33. Do not allow air to flow into a nasogastric tube after administering medication.

____ 34. Do not flush a nasogastric tube with water after administering medication.

____ 35. Always cover the patient's skin after applying a topical medication.

____ 36. Administer eye medications at room temperature.

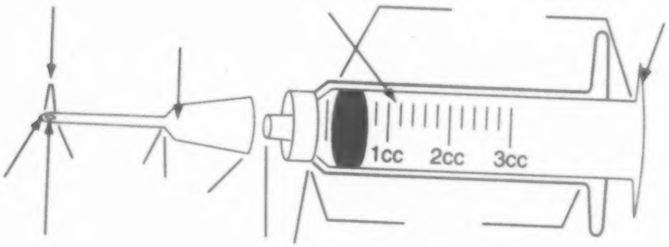
____ 37. Eye medications should be labeled "for ophthalmic use."

____ 38. When administering ear drops, rest the dropper on the side of the patient's ear canal while instilling the prescribed number of drops.

____ 39. Lubricate a suppository before inserting it into the rectum.

OBJECTIVE 7

Label the parts of a syringe and needle. Label the parts of a needle in the blanks provided.



May be photocopied for student use.

OBJECTIVE 8

Select appropriate guidelines for preparing injections. Write a "T" in the blank before each appropriate guideline for preparing injections. Write an "F" in the blank before each false statement.

_____ 1. The length of the needle used is determined by the route used, the patient, the type of injection, and the medication being given.

_____ 2. All syringes for injection should be 2 cc or greater.

_____ 3. To keep glass slivers out of the medication, use a small gauge needle when withdrawing medication from an ampule.

_____ 4. Before attempting to break the neck of an ampule, gently tap the ampule to move the medication to the lower part.

_____ 5. If a multi-dose vial is being used, always use the same puncture site.

_____ 6. Do not remove the needle from the vial for any reason until the dosage is correct.

_____ 7. You may need to tap the vial of dry medication to break up the powder, as it has a tendency to cake.

_____ 8. Use sterile water as the diluent when mixing dry medications.

_____ 9. When combining medications, draw from the single-dose container first.

_____ 10. When combining medications, once the needle is placed into the vial of the second medication, maintain a slight traction on the plunger.

_____ 11. After drawing medication from an ampule, use a filter needle to give the injection.

_____ 12. If the amount of medication to be given is less than 1 cc, accuracy can be increased by using a 1 cc syringe.

_____ 13. After the medication has been removed from an ampule, discard the ampule in a puncture resistant container.

_____ 14. To protect yourself from glass slivers, shield your eyes when breaking the neck of an ampule.

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____ 15. Clean the rubber stopper of a vial with soap and water or povidone-iodine solution before inserting the needle.

____ 16. Handle only the barrel, the flange of the plunger, and the needle cap during the preparation of an injection.

____ 17. Keep the label toward you and the calibrations on the syringe visible as you withdraw the medication.

____ 18. Always check the date on the vial.

____ 19. If dry medication has caked, add a small amount of diluent to the vial and shake thoroughly.

____ 20. Before drawing up medication, push the plunger up within the barrel to assure that the barrel is free of obstructions near the end.

____ 21. After preparing dry medication, label any remaining medication according to facility policy.

____ 22. When combining medications, before drawing the two medications, determine the total amount that will be in the syringe when the procedure is completed.

____ 23. When combining medications from two multi-dose vials, it is acceptable 0.5 cc or less of the first medication to be allowed into the second medication.

____ 24. When combining regular and NPH insulin, draw the longer acting (NPH) insulin first, then the shorter acting (regular).

____ 25. When combining medications, when you remove the needle from the second vial, the release of the vacuum may cause a small amount of spray.

OBJECTIVE 9

Select appropriate guidelines for administering intramuscular injections. Write a "T" in the blank before each appropriate guideline for administering intramuscular injections. Write an "F" in the blank before each false statement.

____ 1. Injection sites for intramuscular injections include the abdomen, thighs, and upper arm.

____ 2. Intramuscular injections should be given at a 60°

angle.

_____ 3. The maximum amount that should be given in one site intramuscularly is 3 cc.

_____ 4. Use a gauge from 21-25, depending on the viscosity of the injection.

_____ 5. Use the z-track method whenever you inject more than 2 cc intramuscularly.

_____ 6. Use light massage, as well as patient activity, to help increase the absorption of the medication.

_____ 7. Intramuscular needles vary greatly in length but are generally 2" to 3".

_____ 8. The deltoid is located three finger breadths below the acromion process.

_____ 9. The vastus lateralis should not be used for children under 3.

_____ 10. The dorsogluteal is located in the lower inner quadrant of the gluteal area.

_____ 11. To locate the rectus femoris, use the same method as locating the vastus lateralis, but move more toward the midline without crossing the midline.

_____ 12. The ventrogluteal uses the gluteus medius muscle.

_____ 13. When using the z-track method, skin and tissue are pulled to one side before giving the injection.

OBJECTIVE 10

Select appropriate guidelines for administering subcutaneous injections. Write a "T" in the blank before each appropriate guideline for administering intramuscular injections. Write an "F" in the blank before each false statement.

_____ 1. The maximum amount that should be given subcutaneously in one site is 3 cc.

_____ 2. Give the injection at a 45° angle to the plane of the site.

_____ 3. The needle gauge ranges from 25-27.

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____ 4. The most common subcutaneous injection sites are the back and upper arms.

____ 5. After injecting insulin, massage the site gently.

____ 6. When injecting heparin, use a 15° angle.

____ 7. Do not perform aspiration before administering heparin.

____ 8. Subcutaneous injections generally require needles from 5/8" to 1" in length.

____ 9. Rotate insulin injection sites to prevent destruction of subcutaneous fat in frequently-injected areas.

____ 10. To mix insulin, shake the bottle vigorously.

____ 11. When injecting heparin, use a ½" needle with a gauge of 26-27.

____ 12.Insulin has a shorter shelf life than most medications.

____ 13. Use a 1 cc tuberculin syringe to accurately measure heparin.

____ 14. To avoid tissue damage, use the same site for each successive injection of heparin.

____ 15. Gentle pressure following the injection of heparin controls local bleeding.

____ 16. The site of choice for heparin injection is the deltoid.

____ 17. Do not inject heparin into a hematoma.

OBJECTIVE 11

Select appropriate guidelines for administering intradermal injections. Write a "T" in the blank before each appropriate guideline for administering intramuscular injections. Write an "F" in the blank before each false statement.

____ 1. The angle of injection should be 45°

____ 2. To prevent tissue damage, use a rotating schedule to administer intradermal injections.

____ 3. Mark the exact location of the test so that readings will be accurate.

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____ 4. Apply ice after administering an intradermal injection.

OBJECTIVE 12

Identify methods used when administering medications to a young child or infant. Write a "T" in the blank before each appropriate guideline for administering intramuscular injections. Write an "F" in the blank before each false statement.

____ 1. Do not use a medicine glass to give an infant medications.

____ 2. Measure small dosages (½ teaspoon or less) in a teaspoon or in a dram glass.

____ 3. Never hold an infant's nose to force swallowing.

____ 4. When possible, use needles with larger lumens to prevent undue pain.

____ 5. Intramuscular injections for infants and young children should be given in the ventrogluteal area because it is the largest muscle.

____ 6. If the child's nose is congested, suction it before inserting nose drops.

____ 7. Administer nose drops with the dropper pointed slightly downward.

____ 8. Ask the child not to sniff for several minutes after you administer nose drops.

____ 9. Administer ear drops at room temperature.

____ 10. Pull the child's ear down and back to straighten the external auditory canal.

____ 11. Instill eyedrops in the lower conjunctival sac, not on the eyeball.

____ 12. Use a tongue blade to hold an infant's eyes open, if necessary.

____ 13. Do not leave infants on their backs after giving oral medications.

____ 14. When giving children dosages ordered in minims or less than 1 cc, use a 3 cc syringe.

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____ 15. When giving oral medication to an infant, elevate the infant's head and give only a few drops at a time, making sure it is swallowed.

____ 16. It is usually best to have parents in the room when a child is getting an injection.

____ 17. All tablets given to children must be crushed.

____ 18. Administer injected medication as quickly as safety permits so that the child's anticipation is kept to a minimum.

____ 19. Report spitting or vomiting.

____ 20. Ask children to look down while instilling eye drops.

____ 21. Do not use oily nose drops; aspiration is possible.

____ 22. When giving oral medications, check the child's mouth to verify the medication has been swallowed.

____ 23. After administering ear drops, always insert cotton ear plugs.

OBJECTIVE 13

Select appropriate guidelines for using standing orders. Write an "X" in the blank before each appropriate guideline.

____ 1. Evaluate the patient's condition and determine if a medication listed in a standing order is appropriate.

____ 2. Contact the patient's physician before administering any standing order.

____ 3. Do **not** administer medication simply because the patient meets the criteria.

____ 4. Check standing orders for completeness

____ 5. If the standing order has an expiration date, medications must be reordered or discontinued after that date.

____ 6. Do not use standing orders that are over 60 days old.

____ 7. The physician must co-sign orders within 24 hours.

____ 8. Document the reason you gave the medication

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____ 9. On the standing order form, document the name of the patient and the date the medication was given.

OBJECTIVE 14 **Evaluated on Assignment Sheet 1**

OBJECTIVE 15 **Identify guidelines for reading a medicine glass.** Write an "X" in the blank before guidelines for reading a medicine glass.

____ 1. Place the glass on a flat surface.

____ 2. Hold the glass at eye level.

____ 3. If the meniscus is positive, read the highest point; if the meniscus is negative, read the lowest point.

____ 4. Read the bottom of the meniscus.

OBJECTIVE 16 **Evaluated on Assignment Sheet 2**

OBJECTIVE 17 **Evaluated on Assignment Sheet 3**

OBJECTIVE 18 **Evaluated on Job Sheet 1**

OBJECTIVE 19 **Evaluated on Job Sheet 2**

OBJECTIVE 20 **Evaluated on Job Sheet 3**

OBJECTIVE 21 **Evaluated on Job Sheet 4**

OBJECTIVE 22 **Evaluated on Job Sheet 5**

OBJECTIVE 23 **Evaluated on Job Sheet 6**

OBJECTIVE 24 **Evaluated on Job Sheet 7**

OBJECTIVE 25 **Evaluated on Job Sheet 8**

May be photocopied for student use.

OBJECTIVE 26	**Evaluated on Job Sheet 9**
OBJECTIVE 27	**Evaluated on Job Sheet 10**
OBJECTIVE 28	**Evaluated on Job Sheet 11**
OBJECTIVE 29	**Evaluated on Job Sheet 12**
OBJECTIVE 30	**Evaluated on Job Sheet 13**
OBJECTIVE 31	**Evaluated on Job Sheet 14**
OBJECTIVE 32	**Evaluated on Job Sheet 15**
OBJECTIVE 33	**Evaluated on Job Sheet 16**
OBJECTIVE 34	**Evaluated on Job Sheet 17**
OBJECTIVE 35	**Evaluated on Job Sheet 18**
OBJECTIVE 36	**Evaluated on Job Sheet 19**
OBJECTIVE 37	**Evaluated on Job Sheet 20**
OBJECTIVE 38	**Evaluated on Job Sheet 21**

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THE FIVE RIGHTS

The "five rights" of medication administration are one of the most important things you will learn. The five rights are

- right patient
- right medication
- right dosage
- right route
- right time

What could happen if you do not follow the five rights carefully? Consider these examples:

You are working a shift in an unfamiliar unit of the hospital while they are understaffed. A coworker asks you to give Mr. Smith an injection. You go into Mr. Smith's room and see a patient sitting in a chair between the two beds. "Mr. Smith?," you ask. He shakes his head and points to the bathroom, where the other patient in the room is shaving. When you say, "Mr. Smith?," he smiles and nods, so you give him the injection. You later find out that you gave the injection to Mr. Jones. Mr. Smith, the man in the chair, is hard of hearing. Mr. Jones does not speak English. You medicated the wrong patient because neither patient understood what you were saying.

The doctor orders morphine for a patient. You think morphine is a generic name for hydromorphone, so you give the patient an injection of hydromorphone. But you were wrong — morphine and hydromorphone are different drugs. In fact, hydromorphone is almost six times more potent than morphine. Your patient has been dangerously overmedicated because you did not give the right medication.

Failing to follow the five rights can harm or even kill your patient. Your career is also at stake. Scrupulously following the five rights is the best protection for you and your patient.

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LAP
SHEET

ASSISTING WITH INTRAVENOUS THERAPY

5

Check the blank as you complete each step.

1. **Take** ___ the pretest provided by your instructor. Have your instructor evaluate your completed test. After your test has been evaluated, follow your instructor's recommendations.
2. **Read** ___ the introduction, unit objective, and specific objectives.
3. **Do** ___ the focus assignments.
4. **Stop** ___ and have your instructor evaluate your work from the focus assignment. After your work has been evaluated, follow your instructor's recommendations.
5. **Study** ___ the Information Sheets, objective 1.

Optional Ask ___ your instructor to provide information on patients in clinical areas as examples of specific purposes for intravenous therapy.

6. **Study** ___ the Information Sheets, objective 2.

Optional Ask ___ your instructor to demonstrate the four different methods and show the equipment used for each method of administration.

Optional Ask ___ your instructor to provide the abbreviations the local facility uses for each method and discuss how different abbreviations may be used in different facilities.

7. **Study** ___ the Information Sheets, objective 3.
8. **Ask** ___ your instructor to discuss the advantages and disadvantages of each site.
9. **Study** ___ the Information Sheets, objective 4.

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10. **Study** ___ examples of specific diagnoses and symptoms that would require an IV solution. Identify which type of solution should be used and why.

11. **Ask** ___ your instructor about using fluids with no or minimal dextrose for diabetic patients.

Optional Ask ___ your instructor to demonstrate the effects of hypotonic solutions on cells by using water and a natural sponge.

12. **Study** ___ the Information Sheets, objective 5.

13. **Ask** ___ your instructor to discuss the advantages and disadvantages for both medications and the fluid therapy of IVs, including safety factors.

Optional Ask ___ your instructor for examples of desired and undesired effects of IVs.

14. **Study** ___ the Information Sheets, objective 6.

Optional Work ___ with an IV team in the local facility.

15. **Study** ___ the Information Sheets, objective 7.

16. **Do** ___ Assignment Sheet 1.

17. **Ask** ___ your instructor to demonstrate the preferred method of calculation and discuss documentation, including abbreviations and terms that may vary by facility.

18. **Stop** ___ and have your instructor evaluate your work from Assignment Sheet 1. After you work has been evaluated, follow your instructor's recommendations.

19. **Study** ___ the Information Sheets, objective 9.

20. **Ask** ___ your instructor to discuss the nursing process which results from IV therapy on nursing care plans.

21. **Study** ___ the Information Sheets, objective 10.

22. **Ask** ___ your instructor to demonstrate the use of common controllers and pumps.

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Optional Ask ___ your instructor to demonstrate the differences in needles used with infusion ports.

Optional Ask ___ your instructor to discuss the choice of whether to use controllers in certain settings (ICU, ER, etc.)

11. Do ___ Assignment Sheet 2.

Optional Work ___ in groups to complete Assignment Sheet 2.

12. Stop ___ and have your instructor evaluate your work from Assignment Sheet 2. After you work has been evaluated, follow your instructor's recommendations.

13. Ask ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 1. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

14. Ask ___ your instructor to discuss assessment data and documentation.

15. Practice ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

16. Stop ___ and have your instructor evaluate your work from Job Sheet 1. After you work has been evaluated, follow your instructor's recommendations.

17. Ask ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 2. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

18. Practice ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

19. Stop ___ and have your instructor evaluate your work from Job Sheet 2. After you work has been evaluated, follow your instructor's recommendations.

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20. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 3. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

Optional Ask ___ your instructor to discuss dressing preferences and provide the dressing material used in the local facility.

21. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

22. **Stop** ___ and have your instructor evaluate your work from Job Sheet 3. After you work has been evaluated, follow your instructor's recommendations.

23. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 4. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

Optional Ask ___ your instructor about local policy regarding sending the tip of the catheter to the lab for detection of possible sepsis.

24. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

25. **Stop** ___ and have your instructor evaluate your work from Job Sheet 4. After you work has been evaluated, follow your instructor's recommendations.

26. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 5. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

Optional Examine ___ examples of different heparin lock devices, heparin flush solution, and regular heparin.

27. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

28. **Stop** ___ and have your instructor evaluate your work from Job Sheet 5. After you work has been evaluated, follow your instructor's recommendations.

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29. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 6. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

30. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

31. **Stop** ___ and have your instructor evaluate your work from Job Sheet 6. After you work has been evaluated, follow your instructor's recommendations.

32. **Ask** ___ your instructor to demonstrate the guidelines and procedures in Job Sheet 7. Use the Job Sheet to follow along. Pay careful attention to any guidelines, cautions, and warnings.

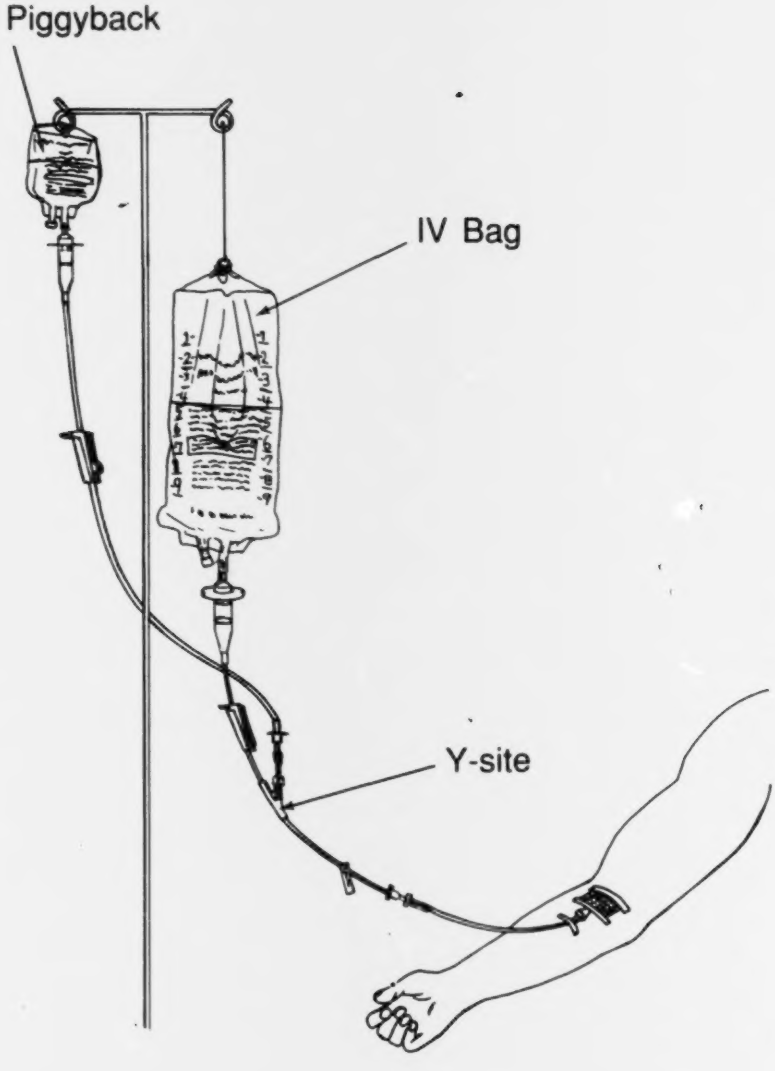
33. **Practice** ___ the procedures demonstrated by your instructor. Use the Job Sheet as a guide.

34. **Stop** ___ and have your instructor evaluate your work from Job Sheet 7. After you work has been evaluated, follow your instructor's recommendations.

35. **Take** ___ the posttest provided by your instructor. Have your instructor evaluate your completed test. After your test has been evaluated, follow your instructor's recommendations.

May be photocopied for student use.

Piggybacked IV


Piggyback
IV Bag
Y-site

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WRITTEN TEST

ASSISTING WITH INTRAVENOUS THERAPY

5

Name ______________________________ Score __________

OBJECTIVE 1

Identify the general purposes for intravenous therapy. Write an "X" in the blank before each general purpose for intravenous therapy.

____ 1. Administering medications that have a bad taste if swallowed

____ 2. Administering medications directly into the vascular system

____ 3. Administering fluids directly into the vascular system

____ 4. Administering gasses directly into the vascular system

OBJECTIVE 2

Identify methods of medication administration using intravenous therapy. Write the letter of the correct answer in the blank.

A. add medication to main IV fluid
B. drip chamber bolus
C. infusion port
D. infusion volume method
E. intravenous push
F. isotonic push
G. piggyback method
H. push bolus into main IV fluid
I. volume control set

____ 1. A small bag of fluid to which medication has been added

____ 2. Medication can be added directly into the main IV fluid

____ 3. Drip chamber is filled on a frequent basis (once every ½ - 2 hours) with the desired amount of fluid; medication may be added to this fluid

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____ 4. The introduction of a medication directly into the vein

____ 5. A small device which is implanted under the skin of the chest wall

OBJECTIVE 3

Identify common sites for intravenous therapy. Write an "X" in the blank before each common site for intravenous therapy.

____ 1. arm

____ 2. back

____ 3. back of hand

____ 4. chest

____ 5. forearm

____ 6. foot

____ 7. neck

____ 8. thigh

OBJECTIVE 4

Distinguish among the effects of isotonic, hypotonic, and hypertonic intravenous fluid. Write the letter of the correct answer in the blank.

A. hypertonic
B. hypotonic
C. isotonic

____ 1. adds fluid without affecting cells

____ 2. draws fluid from the cells into the bloodstream, causing cells to shrink

____ 3. draws fluid from the bloodstream into the cells, causing cells to swell

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OBJECTIVE 5

Identify the advantages and disadvantages of intravenous therapy. Write an "A" in the blank before each advantage of intravenous therapy. Write a "D" in the blank before each disadvantage of intravenous therapy. Write an "X" in the blank before each answer that is not an advantage or disadvantage of intravenous therapy.

_____ 1. fluid overload

_____ 2. provides for administration of medication and fluids to patients who may be unable to tolerate other forms

_____ 3. phlebitis

_____ 4. medications are slower to take effect

_____ 5. severe allergic reactions

_____ 6. controversy over the use of dressings

_____ 7. contamination

_____ 8. provides an effective method for fluid replacement

_____ 9. tissue extravasation

_____ 10. provides a route of medication administration

_____ 11. infections

_____ 12. sterile technique

OBJECTIVE 6

Discuss the steps of the nursing process as they relate to patients receiving IV therapy. Write the letter of the correct answer in the blank.

_____ 1. The planning part of the nursing process for patients receiving IV therapy should include

A. age and vital signs
B. documentation and effectiveness
C. equipment and pumps
D. sterile technique and universal precautions

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____ 2. Patient assessment should include

A. catheter site and dressing
B. facility policy and procedure
C. indications of complications of fluid overload
D. maintaining function of equipment and flow rates

____ 3. Sterile technique, universal precautions, and maintaining the dressing site are all part of

A. analysis
B. assessment
C. evaluation
D. implementation

____ 4. Required documentations associated with treatment are a part of

A. assessment
B. evaluation
C. implementation
D. planning

____ 5. Age, vital signs, and weight are part of the

A. assessment
B. evaluation
C. implementation
D. planning

OBJECTIVE 7

Give the formula to calculate the flow rate of IV fluids. Write the formula below.

____

OBJECTIVE 8

Evaluated on Assignment Sheet 1

May be photocopied for student use.

OBJECTIVE 9

Select appropriate guidelines for assisting with IV therapy.
Write the letter of the correct answer in the blank.

____ 1. When performing an assessment of the equipment, you should check for

A. adequate amount of air in tubing
B. drip chamber completely full
C. pump registering drips correctly
D. time marks written clearly, directly on bag

____ 2. Check for obstacles, leaks, or kinks in the

A. pump
B. tubing
C. site
D. solution container

____ 3. When assessing the patient for general symptoms, include

A. changes in blood pressure and neck vein distention
B. confusion and anxiety
C. constipation or diarrhea
D. low body temperature

____ 4. A single container of intravenous solution should not run for more than _____ hours.

A. 6
B. 12
C. 24
D. 36

____ 5. When converting an IV to a heparin lock,

A. avoid aspirating to prevent hematoma formation
B. flush with dilute heparin solution both before and after administration
C. prime the device with the IV solution before attaching it to the catheter hub
D. use regular heparin

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____ 6. Factors which may change the rate of flow include

A. fluid level
B. dressings
C. type of drip chamber used
D. tubing hanging above the patient

____ 7. IV dressings should be changed

A. at each shift
B. every 24 hours
C. when replacing solution
D. when changing tubing

____ 8. When discontinuing an IV, after removing the catheter you should

A. apply a tourniquet according to facility policy
B. flush with heparin flush solution
C. stabilize the catheter hub
D. inspect the tip to determine that it is intact

____ 9. After changing IV containers, write the date and time

A. directly on the bag
B. in the patient's chart
C. in the nurse's notes
D. on a strip of tape

____ 10. When taping gauze for an IV dressing,

A. completely encircle the patient's arm with tape
B. make sure the patient is not allergic to the tape being used
C. mark the date and time of the dressing change on the tape
D. use sterile tape

OBJECTIVE 10

Identify the purpose and risks of infusion pumps. Write a "P" in the blank before each purpose of infusion pumps. Write an "R" in the blank before each risk of infusion pumps. Write an "X" before each incorrect answer.

____ 1. Patients with infusion pumps are more likely to develop complications such as phlebitis.

____ 2. An infusion pump may not detect irregular situations such as infiltration.

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_____ 3. Infusion pumps sound an alarm when any deviation from normal is detected.

_____ 4. Infusion pumps administer IV fluids faster than gravity devices.

_____ 5. Infusion pumps prevent infiltration.

_____ 6. An infusion pump may act to pump in the reverse direction if set up improperly, pumping fluid from the patient into the container.

_____ 7. Infusion pumps provide a constant surveillance of the intravenous infusion.

_____ 8. Staff may fail to plug the controller in after ambulation of a patient.

OBJECTIVE 11	**Evaluated on Assignment Sheet 2**
OBJECTIVE 12	**Evaluated on Job Sheet 1**
OBJECTIVE 13	**Evaluated on Job Sheet 2**
OBJECTIVE 14	**Evaluated on Job Sheet 3**
OBJECTIVE 15	**Evaluated on Job Sheet 4**
OBJECTIVE 16	**Evaluated on Job Sheet 5**
OBJECTIVE 17	**Evaluated on Job Sheet 6**
OBJECTIVE 18	**Evaluated on Job Sheet 7**

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INFECTION CONTROL

Intravenous therapy puts patients at an increased risk of infection. To help reduce patient exposure to infectious agents, nurses should follow infection control guidelines. These include washing your hands before touching any part of the IV setup, checking IV bottles and bags for cracks or leaks, and checking the expiration date of IV medications before use. Aseptic technique is a vital part of infection control measures.

Nurses are also at risk. You must follow universal precautions to reduce the potential exposure to patient blood. For example:

- Wear gloves when touching blood and body fluids (or surfaces soiled with blood and body fluids), mucous membranes, or non-intact skin of patients, or performing procedures that could result in exposure to any of these.
- Wear gloves when you have a break in your skin.
- Wash your hands immediately after removing gloves.
- Never recap, break, or bend a used needle. Dispose of used needles and other sharps in a puncture-proof container. This container should be kept at the patient's bedside.
- Use a 1:10 bleach solution to clean up spills of blood or body fluids. Contaminated or disposable equipment should be put in the appropriate container for pickup. Many facilities use special biohazard bags.
- When performing a procedure that may result in splashing of blood or body fluids, wear protective gear such as goggles and face shields.

Maintaining aseptic technique and following universal precautions will help ensure the safety of you and your patients.

Pharmacology

Student Workbook

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TABLE OF CONTENTS

UNIT 1
Calculating Medication Dosages I-1

UNIT 2
Documenting Medications II-1

UNIT 3
Identifying Classification and Effects of Medications III-1

UNIT 4
Administering Medications IV-1

UNIT 5
Assisting with Intravenous Therapy V-1

OBJECTIVE SHEET

CALCULATING MEDICATION DOSAGES

1

INTRODUCTION

Accuracy is extremely important when calculating medication dosages. Administering an inaccurate dose can have a severe effect on your patient. Checking answers closely and following procedures provides the best defense against possible errors that can harm your patient and jeopardize your career.

Learning the calculation skills necessary to provide the correct amount of medication for a patient is important in becoming a practical nurse. This unit will help to build confidence in these much needed skills.

PREREQUISITE

You must be able to perform basic math skills in addition, subtraction, multiplication, and division.

FOCUS ASSIGNMENTS

Reading Comprehension
- Gain factual information
- Analyze cause and effect
- Draw conclusions

Language
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Composition
- Use complete sentences

FOCUS ASSIGNMENTS	
PREREADING:	Read Handout 1, "Alternative Methods for Calculating Pediatric Dosages." As you read, pay special attention to the factors used in calculating pediatric medication dosages.
WRITING:	Which do you think would be more accurate — a dosage based on the patient's age or a dosage based on the patient's weight? Why? Write a short (one paragraph) answer.

UNIT OBJECTIVE

After completing this unit, you will show the following competencies by mastering the activities on the Assignment Sheets and by scoring at least 85% on the Written Test.

SPECIFIC OBJECTIVES

After completing this unit, you will be able to

1. List the units in each measurement system used in pharmacology.
2. Distinguish between characteristics of each system of measurement.
3. Interpret verbal and written numbers. (Assignment Sheet 1)
4. Calculate using basic math skills: addition, subtraction, multiplication, and division. (Assignment Sheet 2)
5. Calculate using fractions. (Assignment Sheet 3)
6. Calculate using decimals. (Assignment Sheet 4)
7. Identify the parts of a proportion statement.
8. Calculate using ratios and proportions. (Assignment Sheet 5)
9. Complete rules for using apothecary Roman numerals.
10. Read and write apothecary Roman numerals. (Assignment Sheet 6)
11. Use a chart to determine equivalents among the three systems of measurement.
12. Give the formula for using ratio and proportion to convert medication dosages from one unit of measurement to another unit of measurement.
13. Convert medication dosages from one unit of measurement to another unit of measurement. (Assignment Sheet 7)
14. List the information necessary for dosage calculation.
15. Given a medication order and label information, determine the information necessary for dosage calculation. (Assignment Sheet 8)
16. Calculate medication dosages. (Assignment Sheet 9)
17. Calculate medication dosages proportionate to body weight. (Assignment Sheet 10)
18. Calculate medication dosages for infants and children using Clark's rule. (Assignment Sheet 11)

19. List steps to take when calculated results show unusual dosage results.

20. Using case studies, determine correct action to follow when calculated results show unusual dosage results. (Assignment Sheet 12)

INFORMATION SHEET

CALCULATING MEDICATION DOSAGES

1

OBJECTIVE 1

List the units in each measurement system used in pharmacology.

Optional Activities/ Resources in Instructor's Guide

☑ **NOTE:** The metric system, the apothecary system, and the household system are the three systems of measurement used in pharmacology. Medications may also be ordered by units (U) or milliequivalents (mEq).

- Metric system
  - distance
    - centimeter (cm)
    - meter (M)
  - volume
    - cubic centimeter (cc)
    - milliliter (ml)
    - gram (G)
    - liter (L)

    ☑ **NOTE:** A cubic centimeter (cc) is equal to a milliliter (ml).
  - weight
    - microgram (mcg)
    - milligram (mg)
    - kilogram (kg)

- Apothecary system
  - volume
    - minim (m, m_x)
    - fluidram (fl dr)
    - fluidounce (fl oz)
    - pint (pt)
    - quart (qt)

- ☐ weight
    - ▸ grain (gr)
    - ▸ dram (dr)
    - ▸ ounce (oz)

- Household system
  - ☐ distance
    - ▸ inch (in)
    - ▸ foot (ft)
    - ▸ mile (mi)
  - ☐ volume
    - ▸ drop (gtt)
    - ▸ teaspoon (t, tsp)
    - ▸ tablespoon (T, tbsp)
    - ▸ cup (cu)
    - ▸ pint (pt)
    - ▸ quart (qt)
    - ▸ gallon (gal)
  - ☐ weight
    - ▸ ounce (oz)
    - ▸ pound (lb)

OBJECTIVE 2

Distinguish between characteristics of each system of measurement.

Optional Activities/
Resources in
Instructor's Guide

- Metric
  - ☐ Most scientifically accurate measurements
  - ☐ Many people are unfamiliar with these measurements and do not have metric measurement utensils at home
- Apothecary
  - ☐ Accurate measurements
  - ☐ Used only in pharmacology
  - ☐ Difficult to discriminate between and transcribe symbols
  - ☐ Old system that is being phased out

- Household
  - ☐ Clients are familiar with these measurements and have household measurement utensils for this system at home
  - ☐ Least accurate system because of differences in manufacture of utensils

OBJECTIVE 3 **Complete Assignment Sheet 1.**

OBJECTIVE 4 **Complete Assignment Sheet 2.**

OBJECTIVE 5 **Complete Assignment Sheet 3.**

OBJECTIVE 6 **Complete Assignment Sheet 4.**

OBJECTIVE 7 **Identify the parts of a proportion statement.**

Optional Activities/ Resources in Instructor's Guide

WORDS YOU SHOULD KNOW	
ratio	a statement of the relationship between two factors

Most methods of calculating dosage require the use of ratio and proportion. The following formula is used to set up a ratio and proportion statement.

known a : known b :: unknown a : unknown b

☑ **NOTE:** This statement is read "Known a is to known b as unknown a is to unknown b."

"A" and "known a" must have the same measurement units, as must "b" and "unknown b." The ratio "a : b" on the left side of the (::) symbol is the *known ratio* in the proportion statement. This is a ratio that we already know to be true. For example, 12 inches are in 1 foot, 4 quarts are in 1 gallon, and 100 centimeters are in one meter.

The ratio "known a : unknown b" is the *unknown ratio* in the proportion statement. This is the ratio you want to determine. You will be given the *known ratio* and will have to determine the *unknown ratio.*

The means are the two inner numbers of a proportion statement. The extremes are the two outer numbers of a proportion statement. You will use the means and extremes when solving proportion problems in objective 8.

EXAMPLE

How many inches are in 5 feet?

1 foot : 12 inches :: 5 feet : unknown inches

1 foot = known a
5 feet = unknown a
12 inches = known b
unknown inches = unknown b
means = 12 inches, 5 feet
extremes = 1 foot, unknown inches

OBJECTIVE 8 **Complete Assignment Sheet 5.**

OBJECTIVE 9 **Complete rules for using apothecary Roman numerals.**

☞ **NOTE:** The apothecary system was developed several hundred years ago, and uses Roman numerals (such as I, V, and X), an older set of numbers than the Arabic numbers (such as 1, 2, and 3) we typically use today.

- Rules for using Roman numerals:
    - ☐ Use the following Roman numerals with apothecary dosages:
        - ▸ ss = ½ (Other fractions are expressed with Arabic numerals.)
        - ▸ I or i = 1
        - ▸ V or v = 5
        - ▸ X or x = 10

    ☞ **NOTE:** X is also used in equations as a symbol for an unknown number.

    - ☐ Always read a group of Roman numerals as one number.
    - ☐ Read the numbers from left to right.

  - When a smaller number follows a larger number, add the two numbers together.

    EXAMPLE: VII = V(5) + II(2) = 7

  - When a smaller number precedes a larger number, subtract the smaller number from the larger one.

    EXAMPLE: IV = V(5) - I(1) = 4

  - When a smaller number is between two larger numbers, subtract first, then add.

    EXAMPLE: XIX = X (10) + IX (10-1) = 19

  - The maximum number of like symbols in a row is three.

    EXAMPLE: VIII = 8, but IX = 9 (not VIIII)

- The following rules are specifically for the use of Roman numerals in the apothecary system:

  - Roman numerals above 15 are expressed with Arabic numerals.

  - When a Roman numeral is used, it should be placed after the unit of measurement. However, when an Arabic numeral is used, it should be placed before the unit of measurement.

    EXAMPLE: gr v, 30 gr

OBJECTIVE 10 **Complete Assignment Sheet 6.**

OBJECTIVE 11 **Use a chart to determine equivalents among the three systems of measurement.**

☞ **NOTE:** Charts are often used to help determine equivalents. Charts are usually available in the workplace; they can also be purchased for personal use. In order to give the correct amount of medication, you must be able to read the equivalent chart correctly. The following chart shows measurements that are equal in the three different systems. The measurement equivalents found in bold type will be used frequently. Measurements found on the same line are approximately equal.

☞ **NOTE:** Remember that 1 cc equals 1 ml.

Fluids		
Metric	Apothecary	Household
0.060 ml	**m i**	**1 gtt**
1 ml (cc)	m xv (15 m)	15 gtt
5 ml	**1 fl dr, f**	**1 tsp**
15 ml	3 f	1 tbsp
30 ml	1 fld oz	2 tbsp (⅛ cup)
250 ml	8 fld oz	1 cup or glass
500 ml	16 fld oz	1 pt
1000 ml (1 L)	32 fld oz	1 qt
4 L	128 fld oz	1 gal

Weight		
Metric	Apothecary	Household
0.4 mg	gr 1/150	
1 mg	gr 1/60	
60 mg (0.060 G)	**gr i**	
500 mg (0.5 G)	gr viiss (7½ gr)	⅛ tsp
1000 mg (1 G)	**gr xv (15 gr)**	¼ tsp
4 G (4000 mg)	60 gr (1 dr)	1 tsp
15 G	4 dr	1 tbsp
30 G	1 oz	2 tbsp
0.455 Kg	12 oz	1 lb
1 Kg		**2.2 lb**

OBJECTIVE 12

Give the formula for using ratio and proportion to convert medication dosages from one unit of measurement to another unit of measurement.

Required Activities/
Resources
– Measuring Utensils

Optional Activities/
Resources in
Instructor's Guide

You will see examples of utensils that are used in each system of measurement.

Medication orders may differ in units from those available in the pharmacy. You must convert the ordered units into the available units. There are several ways to convert equivalents. One common method is ratio and proportion.

Known unit of measure : Known equivalent :: Desired unit of measure : Unknown equivalent

OBJECTIVE 13

Complete Assignment Sheet 7.

OBJECTIVE 14

List the information necessary for dosage calculation.

Required Activities/
Resources
– Discussion

Start with the question, "What other terms might facilities use?"

- Dosage ordered

  The dosage ordered is usually a weight indicating the amount of medication being given — this information is provided in the physician's order.

- Dose on hand

  The dose on hand is a measurement indicating the amount of medication in each dose. The dose on hand is located on the medication label. If the units on the label and the units on the dosage ordered are different, you will need to convert between the systems.

- Quantity on hand

  The quantity on hand is the form of the medication, such as tablets or a liquid measurement. This information can also be found on the medication label. Note that quantity on hand does not mean the total number of dosages available — instead, it indicates how many units are needed to hold the dose on hand.

EXAMPLE:

Order: Give aspirin 650 mg every 4 hours as needed for headache.
Label: Aspirin 325 mg per tablet.

In this example, the dosage ordered is 650 mg, the dose on hand is 325 mg, and the quantity on hand is 1 tablet.

OBJECTIVE 15 **Complete Assignment Sheet 8.**

OBJECTIVE 16 **Complete Assignment Sheet 9.**

OBJECTIVE 17 **Complete Assignment Sheet 10.**

OBJECTIVE 18 **Complete Assignment Sheet 11.**

OBJECTIVE 19 **List steps to take when calculated results show unusual dosage results.**

Required Activities/
Resources
– Discussion

Optional Activities/
Resources in
Instructor's Guide

Start with the questions, "What procedure should I follow as a student, and how will this change when I am a licensed nurse?" and "what do I do if different facilities have different policies?"

Whenever you calculate a dosage, check your result for "reasonableness." One rule of thumb is a dosage should not be less than ½ tablet or more than 2 tablets, or an injection should not be less than ½ cc or more than 3 cc. If you calculate an amount that does not seem reasonable, follow these steps until the problem is resolved.

1. Double-check your calculations.
2. Ask your supervising nurse to check your calculations.
3. Ask the pharmacist to confirm that the calculation is correct and that the resultant amount is within normal dosages for that particular medication.
4. Contact the physician to verify the order and confirm the reason for the unusual dosage.

5. Decide whether to give the medication or not, based on your own judgement. If you decide not to give the medication, you must inform your supervising nurse, who must make a judgement whether or not to give the medication.

OBJECTIVE 20

Complete Assignment Sheet 12.

ASSIGNMENT SHEET 1

CALCULATING MEDICATION DOSAGES

1

Name ______________________ Score __________

OBJECTIVE 3 **Interpret verbal and written numbers.**

INSTRUCTIONS Write the correct answer in the blank. Your instructor may ask you to show your work on scratch paper. If any of the math skills are difficult for you, ask your instructor for help.

Oral Presentation
- Use good speaking techniques

Listening
- Apply active listening skills

Cognitive Activities
- Collect/record information
- Analyze/synthesize information

Functional Reading
- Read Aloud

1. Listen to the numbers being read aloud and write them in Arabic numeral form (1, 2, 3). Your instructor will read the numbers, or the numbers will be played from a prerecorded tape.

    a. _____
    b. _____
    c. _____
    d. _____
    e. _____
    f. _____
    g. _____
    h. _____
    i. _____
    j. _____

2. Copy the following numbers exactly as you see them.

    a. 843 _______
    b. 34892 _______
    c. 660,000 _______
    d. 22 1/8 _______
    e. 1 1/125 _______
    f. 51/58 _______
    g. 9.012 _______
    h. 0.0138 _______
    i. 101.05 _______
    j. 1,000,005.33 _______

3. Read the above numbers aloud when directed by instructor.

4. Write the following numbers out in word form.

    a. 932 ______________________________

    b. 340,029 ______________________________

    c. 29 1/2 ______________________________

    d. 0.058 ______________________________

    e. 2,016,203.92 ______________________________

ASSIGNMENT SHEET 2

CALCULATING MEDICATION DOSAGES

Name ____________________ Score __________

OBJECTIVE 4

Calculate using basic math skills: addition, subtraction, multiplication, and division.

EQUIPMENT AND SUPPLIES

- Handout 2, "Basic Math Skills"

INSTRUCTIONS

Write the correct answer in the blank. Your instructor may ask you to show your work on scratch paper. If any of the math skills are difficult for you, ask your instructor for help.

Operation and Calculation
- Calculate with whole numbers
- Solve numerical expressions

1. 4 + 9 = __________
2. 32 + 18 = __________
3. 315 + 327 = __________
4. 4813 + 311 = __________
5. 97 + 83 + 16 = __________
6. 114 + 654 + 3 = __________
7. 65 + 892 + 9 = __________
8 1,001,899 + 300,103 = __________

9. 14 - 8 = __________
10. 58 - 23 = __________
11. 872 - 735 = __________
12. 903 - 89 = __________
13. 1433 - 752 = __________
14. 6645 - 1205 = __________
15. 24030 - 893 = __________

16. 600,000 - 320,000 = ________

17. 8 x 3 = ________

18. 22 x 7 = ________

19. 31 x 13 = ________

20. 84 · 66 = ________

21. 101 · 5 = ________

22. 390(58) = ________

23. 2260(43) = ________

24. 893 x 641 = ________

25. 14 ÷ 2 = ________

26. 32/4 = ________

27. 55 ÷ 11 = ________

28. 645 ÷ 15 = ________

29. 888/37 = ________

30. 2499 ÷ 21 = ________

31. 656 ÷ 82 = ________

32. 3068 ÷ 56 = ________

ASSIGNMENT SHEET 3

CALCULATING MEDICATION DOSAGES

1

Name ______________________ Score __________

OBJECTIVE 5

Calculate using fractions.

EQUIPMENT AND SUPPLIES

- Handout 3, "Calculating with Fractions"

INSTRUCTIONS

Write the correct answer in the blank. Your instructor may ask you to show your work on scratch paper. If any of the math skills are difficult for you, ask your instructor for help.

Operation and Calculation
- Calculate with fractions
- Convert whole numbers to fractions
- Solve numerical expressions

1. Reduce the following fractions to the lowest terms.

a. 3/12 = ___   d. 44/121 = ___

b. 7/21 = ___   e. 150/1000 = ___

c. 12/16 = ___   f. 255/100 = ___

2. 1/2 + 1/4 = ___

3. 2/3 + 1/9 = ___

4. 3/8 + 5/12 = ___

5. 1/2 + 5/13 = ___

6. 1/2 + 1/3 + 1/4 = ___

7. 1/3 + 2/7 + 5/9 = ___

8. 18/5 + 3/4 + 1/2 = ___

9. $3\,{}^{3}/_{4} + 2\,{}^{5}/_{6}$ = ___

10. 1/5 - 1/6 = ___

11. 8/9 - 2/3 = ___

12. 12/15 - 3/10 = ___

13. 18/24 - 3/8 = ____

14. 9/8 - 5/6 = ____

15. $2\,^{1}/_{2} - 1\,^{3}/_{4}$ = ____

16. $18\,^{1}/_{13} - 5\,^{1}/_{2}$ = ____

17. 87/100 - 300/1000 = ____

18. 1/4 x 3/7 = ____

19. 6/6 x 10/13 = ____

20. 2/3 x 6/9 = ____

21. 4/5 x 7/12 = ____

22. $1\,^{1}/_{2} \times {}^{2}/_{3}$ = ____

23. 2 x 3/10 = ____

24. 15/3 x 90/125 = ____

25. 50/2 x 1/10 = ____

26. 1/8 ÷ 1/4 = ____

27. 2/6 ÷ 8/9 = ____

28. 5/12 ÷ 1/3 = ____

29. 9/10 ÷ 7/7 = ____

30. 8/3 ÷ 3/5 = ____

31. 24/25 ÷ 3/100 = ____

32. $4\,^{5}/_{6} \div {}^{1}/_{2}$ = ____

33. $6\,^{6}/_{10} \div {}^{1}/_{3}$ = ____

ASSIGNMENT SHEET 4

CALCULATING MEDICATION DOSAGES

1

Name ______________________ Score __________

OBJECTIVE 6

Calculate using decimals.

EQUIPMENT AND SUPPLIES

- Handout 4, "Calculating with Decimals"

INSTRUCTIONS

Write the correct answer in the blank. Your instructor may ask you to show your work on scratch paper. If any of the math skills are difficult for you, ask your instructor for help.

Operation and Calculation
- Calculate with decimals
- Solve numerical expressions

1. 2.1 + 0.8 = ________
2. 0.39 + 0.7 = ________
3. 1.47 + 0.04 = ________
4. 3.082 + 6.524 = ________
5. 0.052 + 0.8 + 0.13 = ________
6. 1.33 + 5.5 + 3.915 = ________
7. 0.00872 + 1.993 = ________
8. 0.844 + 92 + 0.33 + 1.1 = ________

9. 3.6 - 1.2 = ________
10. 22.5 - 0.75 = ________
11. 18.899 - 1.1 = ________
12. 0.052 - 0.04 = ________
13. 100 - 0.001 = ________
14. 2 - 1.54 = ________
15. 1.005 - 0.984 = ________

16. 0.1 - 0.0006 = __________

17. 2.2 x 3 = __________

18. 0.5 x 1.9 = __________

19. 0.01 x 0.3 = __________

20. 1.1 x 0.54 = __________

21. 1.36 x 0.55 = __________

22. 0.483 x 0.3 = __________

23. 0.111 x 1.09 = __________

24. 300.1 x 0.0687 = __________

25. 8 ÷ 0.2 = __________

26. 0.6 ÷ 0.03 = __________

27. 1.8 ÷ 0.25 = __________

28. 0.88 ÷ 0.11 = __________

29. 1.5 ÷ 0.5 = __________

30. 0.63 ÷ 1.5 = __________

31. 74.5 ÷ 80 = __________

32. 0.0529 ÷ 0.23 = __________

ASSIGNMENT SHEET 5

CALCULATING MEDICATION DOSAGES

1

Name ______________________ Score __________

OBJECTIVE 8

Calculate using ratios and proportions.

INSTRUCTIONS

Use the following steps to calculate ratios and proportions. If you have any questions about the parts of a proportion statement, review the Information Sheets, objective 7.

1. Determine the known ratio, a : b.
2. Set up the proportion statement. Both a's and both b's must have the same units of measurement.
3. Multiply the means — the two inner numbers.
4. Multiply the extremes — the two outer numbers.
5. Set the two products equal to each other.
6. Divide both products by the number before b to obtain the answer.

EXAMPLE:

How many inches are in 5 feet?

1. Determine the known ratio, a : b.

1 foot : 12 inches

2. Set up the proportion statement. Both a's and both b's must have the same units of measurement.

1 foot : 12 inches :: 5 feet : unknown inches

3. Multiply the means—the two inner numbers, 12 inches and 5 feet.

12 × 5 = 60

Operation and Calculation
- Calculate with whole numbers
- Calculate with decimals
- Solve numerical expressions
- Solve formulae and equations

Math Application
- Solve word problems
- Select/apply mathematical formulae
- Solve ratio/proportion problems

Functional Math
- Solve practical problems

Job Acquisition/ Development
- Master specific job task/procedure

4. Multiply the extremes—the two outer numbers, 1 foot and b inches.

$1 \times b = 1b$

5. Set the two products equal to each other.

$1b = 60$

6. Divide b and 60 by the number preceding b to obtain the answer.

60 divided by 1 = 60 inches

DIRECTIONS

Write the correct answer in the blank. Your instructor may ask you to show your work on scratch paper. If any of the math skills are difficult for you, ask your instructor for help.

1. 2 cups : 1 pt :: 7 cups : _____ pt
2. 12 inches : 1 foot :: 60 in : _____ ft
3. 1 kilogram : 2.2 pounds :: 44 kg : _____ lb
4. 1000 milliliters : 1 quart :: 4500 ml : _____ qt
5. 1 hour : 60 minutes :: _____ hours : 75 min
6. You can jog one mile in 10 minutes.
   a. How long will it take you to jog 3 miles? _______________
   b. How many miles could you jog in 45 minutes? ____________
7. Your patient is on a special diet. For every 12 grams of protein she consumes, she must eat 25 grams of fat.
   a. How many grams of fat should she eat if she eats 36 grams of protein? _______________________________
   b. How much protein should she eat if she eats 45 grams of fat?
   ____

ASSIGNMENT SHEET 6

CALCULATING MEDICATION DOSAGES

1

Name ______________________________ Score __________

OBJECTIVE 10

Read and write apothecary Roman numerals.

INSTRUCTIONS

Cognitive Activities

- Collect/record information
- Analyze/synthesize information

Write the correct answer in the blank.

Convert the following Roman numerals to Arabic numerals.

1. III = ______
2. ii = ______
3. iv = ______
4. xiii = ______
5. xiv = ______
6. iss = ______

Convert the following Arabic numerals to Roman numerals.

7. 2 ½ = ______
8. 6 = ______
9. 9 = ______
10. 12 = ______
11. 8 ½ = ______
12. 11 ½ = ______

Rewrite the following apothecary measurements in word form.

13. gr ii = ______
14. dr iss = ______
15. 60 m = ______
16. gr viiss = ______

17. 3 ¼ oz = ______

Write the following amounts as apothecary measurements.

18. Three grains = ______

19. Fifteen minims = ______

20. Sixty drops = ______

21. Four and one-half ounces = ______

22. One one-hundred-fiftieth grain = ______

23. Four drams = ______

24. Two and one-fourth ounces = ______

25. Twenty and one half grains = ______

ASSIGNMENT SHEET 7 — CALCULATING MEDICATION DOSAGES

1

Name ______________________________ Score __________

OBJECTIVE 13

Convert medication dosages from one unit of measurement to another unit of measurement.

INSTRUCTIONS

- Converting using ratio and proportion

Follow these steps when converting medication dosages from one unit of measurement to another.

EXAMPLE: A person has 10 ml of cough syrup ordered and needs to know how many tsp to take for home use.

1. The *desired unit of measure* that the person wants to take is 10 ml.

Known Unit of Measure : Known Equivalent :: 10 ml : Unknown Equivalent

2. The desired unit is in ml and the person wants to take an equivalent amount in tsp. Therefore, 1 tsp is the *known equivalent.*

Known Unit of Measure : 1 tsp :: 10 ml : Unknown Equivalent

3. To determine the known unit of measure, which is the unit measurement of ml that is equal to 1 tsp, check the table in objective 11. The table shows that 1 tsp is equal to 5 ml. Therefore, the *known unit of measure* is 5 ml.

5 ml : 1 tsp : : 10 ml : unknown tsp

4. Use X to identify the unknown equivalent (the number of tsp equal to 10 ml).

5 ml : 1 tsp : : 10 ml : X tsp

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals
- Solve numerical expressions
- Solve formulae and equations
- Convert units of measure
- Perform metric calculations

Math Application
- Solve word problems
- Select/apply mathematical formulae
- Use English and metric measures
- Solve ratio/proportion problems
- Apply algebra principles

Functional Math
- Solve practical problems

Cognitive Activities
- Collect/record information
- Identify critical elements/issues

Job Acquisition/ Development
- Master specific job task/procedure

5. Define the two inner units, called means, and the two outer units, called extremes. The means and extremes are illustrated and defined above.

   5 ml : 1 tsp : : 10 ml : X tsp

6. Multiply the means together.

   1 (tsp) x 10 (ml) = 10

7. Multiply the extremes together.

   5 (ml) x X (tsp) = 5X

8. Set the two products equal to each other.

   5 X = 10

9. Divide both sides by the number preceding X.

   $\frac{5X}{5} = \frac{10}{5}$ X = 2 tsp

- Converting within the metric system

Within the metric system, you can either use the previous formula or simply move decimals to obtain a quick, accurate conversion.

The conversion between grams and milligrams, or any measurement in the metric system, can be completed using one simple step. Because there are 1000 milligrams in 1 gram, all you will need to do is change the position of the decimal point when converting from one unit to the other.

To convert milligrams to grams, move the decimal point three places to the left. Remember, if no decimal is stated, the number is a whole number and the decimal is understood to follow on the far right side of the number.

EXAMPLE: Change 2500 milligrams to grams
2500 mg = ? G   2500 mg = 2.5 G

To convert grams to milligrams, move the decimal point three places to the right.

EXAMPLE: Change 0.5 grams to milligrams

0.5 G = ? mg
0.500 G = 500 mg

DIRECTIONS

Write the correct answer in the blank. Your instructor may ask you to show your work on scratch paper. If any of the math skills are difficult for you, ask your instructor for help. Use the equivalent table provided in objective 11 to complete the exercises as directed.

Convert the amounts in the left column into the units specified in the right column.

1. 2 ml = ___ m
2. 0.5 ml = ___ m
3. 45 ml = ___ fld dr
4. 12 1/2 ml = ___ fld dr
5. 2500 ml = ___ fld oz
6. 420 ml = ___ fld oz
7. 150 mg = ___ gr
8. 250 mg = ___ gr
9. 1.5 G = ___ gr
10. 0.6 G = ___ gr
11. 30 m = ___ ml
12. 20 m = ___ ml
13. 2 fld dr = ___ ml
14. 1/2 fld dr = ___ ml
15. 3 fld oz = ___ ml
16. 20 fld oz = ___ ml
17. 2 gr = ___ mg
18. 10 gr = ___ mg
19. 50 gr = ___ G
20. 10 gr = ___ G

21. The order reads to give gr 1/4 of morphine. Morphine on hand is in milligrams. How many milligrams will be needed? _________ mg

22. You are to give 2 drams of a cough syrup. If you were to use a syringe measured in ml, how many milliliters should you give? _________ ml

Using the equivalent table in objective 11, convert the measurements in the left column into the household measurements specified in the right column.

23. 10 ml = ____ tsp

24. 7 1/2 ml = ____ tsp

25. 2 dr = ____ tsp

26. 30 ml = ____ tbsp

27. 125 ml = ____ c

28. 500 ml = ____ c

29. 12 fld oz = ____ c

30. 2 fld oz = ____ c

31. 2000 ml = ____ qt

32. 60 Kg = ____ lb

33. 250 mgf = ____ G

34. 325 mg = _ G

35. 2000 mg = _ G

36. 50 mg = _ G

37. 0.1 mg = _ G

38. 0.4 G = ____ mg

39. 1.4 G = ____ mg

40. 25 G = ____ mg

41. 0.03 G = ____ mg

42. 0.001 G = ____ mg

ASSIGNMENT SHEET 8

CALCULATING MEDICATION DOSAGES

1

Name ______________________________ Score __________

OBJECTIVE 15

Given a medication order and label information, determine the information necessary for dosage calculation.

INSTRUCTIONS

Determine the necessary information for dosage calculation for the following orders. Write the correct answer in the blank.

Language
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Cognitive Activities
- Collect/record information
- Identify critical elements/issues

Job Acquisition/ Development
- Master specific job task/procedure

1. Order: Codeine 30 mg p.o. q.4.h. for pain
   Label: Codeine 15 mg per tablet

   Dose ordered ______________________________

   Dose on hand ______________________________

   Quantity on hand ______________________________

2. Order: 200 mg of Theophylline q.8 h
   Label: Theophylline 400 mg per tablet

   Dose ordered ______________________________

   Dose on hand ______________________________

   Quantity on hand ______________________________

3. Order: Vistaril 25 mg I.M. prn. nausea
   Label: Vistaril 50 mg / cc

   Dose ordered ______________________________

   Dose on hand ______________________________

   Quantity on hand ______________________________

4. Order: penicillin 400,000 units I.M. pre-op
   Label: 600,000 units/1.2 cc

   Dose ordered ______________________________

   Dose on hand ______________________________

   Quantity on hand ______________________________

5. Order: K-tabs 20 meq followed by 30 cc of water
Label: K-tab 20 meq / tab.

Dose ordered ______________________________

Dose on hand ______________________________

Quantity on hand ____________________________

ASSIGNMENT SHEET 9

CALCULATING MEDICATION DOSAGES

1

Name ______________________________ Score __________

OBJECTIVE 16 **Calculate medication dosages.**

INSTRUCTIONS

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Convert units of measure

Math Application
- Apply algebra principles

Functional Math
- Solve practical problems

Job Acquisition/ Development
- Master specific job task/procedure

After determining the dosage ordered and the dosage on hand, you should perform any conversion necessary. In this procedure, you should convert the dosage ordered units to the dosage on hand units. This may prevent confusion when setting up the complete dosage calculation later. **When calculating dosages, always double-check the conversion before using the result.**

There are several accurate formulas for calculating dosages. For this Assignment Sheet, use the following formula:

$$\frac{\text{Dosage ordered}}{\text{Dose on hand}} \times \text{Quantity on hand} = \text{Amount desired}$$

EXAMPLE:

Order: Give Aspirin 650 mg every 4 hours as needed for headache

Label: Aspirin 325 mg per tablet

$$\frac{650 \text{ mg}}{325 \text{ mg}} \times 1 \text{ tab} = X \text{ (number of tablets)}$$

$$2 \times 1 = X$$

2 tablets.

After solving an equation, always check the "reasonableness" of your answer. If your dosage answer is less than ½ tablet or more than 2 tablets, or if an injection calculation is less than ½ cc or more than 3 cc, have someone double-check your answer.

DIRECTIONS
Calculate the amount of medication to be given in the exercises below. In the column labeled "Give", write the amount to be given with the correct label of units to be used. Your instructor may ask you to show your work on scratch paper. If any of the following math skills are difficult for you, seek help from your instructor.

Ordered	On hand	Give
EXAMPLE:		
Vistaril 50 mg	Vistaril 100 mg/2 cc	1 cc
1. Demerol 50 mg	Demerol 50 mg/tab	
2. Aspirin 325 mg	Aspirin 650 mg/2 tab	
3. Valium 5 mg	Valium 10 mg/2 cc	
4. Theophylline 150 mg	Theophylline 100 mg/tab	
5. Aldomet 500 mg	Aldomet 250 mg/tab	
6. Capoten 12.5 mg	Capoten 25 mg/tab	
7. Feosol 150 mg	Feosol 300 mg/5 cc	
8. Furosemide 60 mg	Furosemide 80 mg/2 cc	
9. Codeine gr 1/4	Codeine 30 mg/cc	
10. Tylenol gr 10	Tylenol 300 mg/tab	
11. Penicillin 300,000 u	Penicillin 600,000 u/cc	
12. Vistaril 65 mg	Vistaril 100 mg/2 cc	

ASSIGNMENT SHEET 10

CALCULATING MEDICATION DOSAGES

1

Name ______________________________ Score __________

OBJECTIVE 17

Calculate medication dosages proportionate to body weight.

INSTRUCTIONS

Although many medications remain standardized for a 150 lb adult, other medications are developed to meet the needs of individual patients according to their body weight. Because the dosages are specialized for an individual's weight, calculating is necessary to determine the exact dosage amount to be given. As a practical nurse, you are not responsible for prescribing medication dosages. However, you must be able to check the prescribed dosage. Medications are usually ordered by milligrams per kilogram of body weight, so you must use the metric weight measurement of kilograms to calculate specific dosage amounts.

To calculate a dosage that is proportionate to an individual's body weight, you must first determine the number of milligrams of medication required per kilogram of body weight. This information is stated on the medication label. Then determine the patient's weight in kilograms. If you know how many pounds the patient weighs, it may be converted to kilograms using the equivalent 2.2 lbs = 1 kg. The following formula can then be used to calculate a dosage that is proportionate to a patient's body weight.

Label (mg/kg) x patient kg weight = dosage

EXAMPLE: A medication label states that 10 mg of medication should be given to a patient for every kilogram of the patient's total weight. The patient weighs 60 kg. What dosage should the patient receive?

$$\frac{10\text{ mg}}{1\text{ kg}} \times 60\text{ kg} = 600\text{ mg}$$

Generally, this method of calculation is used to determine a daily dosage of a medication, which may then be divided into a specified number of doses.

For example, if a medication were calculated on 2 mg/kg of weight for the daily dose and the patient weighed 30 kg, the total dosage would be 60 mg per day. If this were divided into two doses during the day, each dose would be 30 mg.

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Solve numerical expressions
- Perform metric calculations

Math Application
- Select/apply mathematical formulae
- Select/apply mathematical procedure

Functional Math
- Solve practical problems

Job Acquisition/ Development
- Master specific job task/procedure

This may be shown as follows:

$$\frac{\text{mg}}{\text{kg}} \quad \text{X} \quad \text{person's weight in kg} = \text{dosage}$$

$$\frac{2\text{ mg}}{1\text{ kg}} \quad \text{X} \quad 30\text{ kg} = 60\text{ mg}$$

Then divide 60 mg by 2 = 60 — 2 = 30 mg

DIRECTIONS
Calculate each daily dosage necessary below, and then calculate the individual dose from the information given. Write the correct answer in the blank. Your instructor may ask you to show your work on scratch paper. If any of the following math skills are difficult for you, seek help from your instructor.

Drug dosage (mg/kg)	Patient's weight	Daily dosage	Number of doses	Individual dose
1. 1 mg/kg	10 kg	______	2	______
2. 15 mg/kg	25 kg	______	3	______
3. 2.5 G/kg	42 kg	______	4	______
4. 10 mg/kg	220 lb	______	4	______
5. 1.5 G/kg	176 lb	______	3	______

ASSIGNMENT SHEET 11

CALCULATING MEDICATION DOSAGES

Name ______________________ Score __________

OBJECTIVE 18

Calculate medication dosages for infants and children using Clark's rule.

INSTRUCTIONS

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Solve numerical expressions
- Perform metric calculations

Math Application
- Select/apply mathematical formulae
- Select/apply mathematical procedure

Functional Math
- Solve practical problems

Job Acquisition/Development
- Master specific job task/procedure

Accuracy is even more important when dealing with infants and children because small amounts of medication can have drastic effects on their small bodies. As a practical nurse, you are not responsible for prescribing medication dosages. However, you must be able to check the prescribed dosage. Several methods are available for calculating dosages for infants and children. The method used here, Clark's rule, is based on the child's weight. Because the formula is based on a child's weight, the child who is smaller or larger than average for his age will receive the proper dosage. Clark's rule is not as accurate as methods using body surface area, but many people prefer this formula because it is accurate and does not require any special charts for body surface measurement.

Clark's rule formula

$$\frac{\text{child's weight in pounds}}{150} \times \text{adult dose} = \text{child's dose}$$

NOTE: This formula uses 150 as a divisor because 150 lbs is considered the average adult weight used for adult medication preparation.

EXAMPLE:
The adult dosage of a medication is 100 mg. What dosage should a 30 lb. child receive?

$$\frac{30 \text{ lb}}{150} \times 100 \text{ mg} = 20 \text{ mg}$$

NOTE: If you are working with pediatric medicine, you should become familiar with the method of calculation used in your facility.

DIRECTIONS
Use the Clark's rule formula to solve the following practice exercises. Write the correct answer in the blank. Your instructor may ask you to show your work on scratch paper. If any of the following math skills are difficult for you, seek help from your instructor.

1. Barry is 6 months old and weighs 15 pounds. He is to receive a medication with an average adult dose of 300 mg. How many milligrams should Barry receive? ____________________

2. Erin is 4 years old and weighs 40 pounds. The average adult dose of her medication is 10 mg. How many milligrams should Erin receive? ____________________

3. Paul is 10 and weighs 125 pounds. The average adult dose of his medication is 1 grain. How many milligrams should Paul receive? ____________________

4. Toby weighs 10 kg. The average adult dose of her medication is 100 mg. How many milligrams should Toby receive?
____

5. Chad is 10 years old and weighs 35 kg. The average adult dose of his medication is 1 mg. How many milligrams should he receive? ____________________

ASSIGNMENT SHEET 12

CALCULATING MEDICATION DOSAGES

1

Name ______________________________ Score __________

OBJECTIVE 20

Using case studies, determine correct action to follow when calculated results show unusual dosage results.

INSTRUCTIONS

Evaluate the following case studies and make decisions based on the steps you learned in objective 19.

Language
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Cognitive Activities
- Collect/record information
- Identify critical elements/issues
- Analyze/synthesize information
- Evaluate alternatives
- Select an alternative

Case Study 1

A physician has ordered a medication. The result of your dosage calculation is that 6 cc of a medication should be given.

1. According to the label, the maximum dosage for this medication is 3 cc. What should be the first step when you calculate to 6 cc?

____

2. Who should you contact first?

____

3. The pharmacist tells you that your calculation is correct, and although the dosage is greater than average, the dosage in question is being used for research purposes and has had some very good results with some patients. What should you do now?

____

____

Case Study 2

A medication has been ordered and calculated so that five 10 mg tablets are to be given. The supervising nurse thinks this is too high; the reference books say only 10 mg should be given. The supervising nurse tells you to call the physician who ordered the dosage. The physician tells you that this particular patient needs a high load dose of a medication, and although 10 mg is the standard dose, this high dosage will be used only until the blood level of the medication is sufficient for effects to take place. What should you do now?

OBJECTIVE SHEET

DOCUMENTING MEDICATIONS

2

INTRODUCTION

As a practical nurse, you communicate actions through documentation. This communication skill is critical to avoid medication errors such as missed or extra doses of medication. An undocumented dose of medication is considered not to have been given.

Another purpose of documenting medications is to provide a legal record. Each aspect of medication administration requires documentation according to federal and state laws, as well as professional standards and facility policy. Through documentation, medical personnel are able to record the actions that were taken in a particular situation. Inaccurate or incomplete documentation of actions can result in legal penalties against you. Use documentation as a communication tool to provide safety for the patient and yourself.

PREREQUISITE

Unit 1, "Calculating Medication Dosages"

FOCUS ASSIGNMENTS

FOCUS ASSIGNMENTS

PREREADING:	Read the Handout, "Documentation Guidelines." As you read, think about why these guidelines are important.
WRITING:	Write a short (one paragraph to one page) discussion about what could happen if you did not follow these guidelines. How could the patient *and* nurse be affected?

Reading Comprehension
- Gain factual information
- Analyze cause and effect
- Draw conclusions

Language
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Composition
- Use complete sentences

UNIT OBJECTIVE

After completing this unit, you will show the following competencies by mastering the activities on the Assignment and Job Sheets and by scoring at least 85% on the Written Test.

SPECIFIC OBJECTIVES

1. Match common abbreviations and symbols used in the documentation of the administration of medications to their correct meanings.
2. Interpret written medication orders. (Assignment Sheet 1)
3. Identify the documentation necessary when obtaining a medication.
4. Identify the documentation necessary when giving a medication.
5. Match systems of giving medications with their definitions.
6. Document administration of medication. (Assignment Sheet 2)
7. Identify steps necessary to transcribe medication orders.
8. Transcribe medication orders. (Assignment Sheet 3)
9. Identify assessment data to be included in a medication history.
10. Develop questions to obtain patient assessment data included in a medication history. (Assignment Sheet 4)
11. Identify documentation requirements for verbal and telephone orders.
12. Document verbal and telephone orders. (Assignment Sheet 5)
13. Identify documentation requirements for storage, use, and waste of controlled substances.
14. Document the storage, use, and waste of controlled substances. (Assignment Sheet 6)
15. Count controlled substances. (Job Sheet)

INFORMATION SHEET

DOCUMENTING MEDICATIONS

2

OBJECTIVE 1

Required Activities/
Resources
- Discussion

Optional Activities/
Resources in
Instructor's Guide

Match common abbreviations and symbols used in the documentation of the administration of medications to their correct meanings.

Start with the questions, "Which symbols do I already know," "How are abbreviations used," and "What are routine times for administration of medications?"

☑ **NOTE:** There are many abbreviations and symbols used when documenting the administration of medications. Each facility has an approved list of abbreviations and symbols which each practitioner should refer to and use. The following chart contains many of the most commonly used abbreviations and symbols. You should know these prior to administering medications.

Abbrev./ Symbol	Meaning	Abbrev./ Symbol	Meaning
aa, $\overline{aa}$	of each	OD	right eye
ac	before meals	OS	left eye
ad	right ear	os	mouth
ad lib	as desired	OU	both eyes
am	morning		
amp	ampule	per./	by means of
amt	amount	PM, pm	after noon
as	left ear	po, PO, per os	by mouth
au	both ears	prn, PRN	as necessary
bid	twice a day		
		qd	every day
$\bar{c}$	with	qh	every hour
cap	capsule	q2h	every 2 hours
DC, disc	discontinue	q3h	every three hours
		qid	four times a day
		qod	every other day
		qs	quantity sufficient
elix	elixir	R	rectal
et	and	Rx	take
ext	extract		

fl, fld	fluid	$\bar{s}$	without
		SC, subq	subcutaneous
h, hr	hour	sig	label
H	hypodermic	SL	sublingual
H_2O	water	sol	solution
H_2O_2	hydrogen peroxide	sp	spirits
hs, HS	hours of sleep	stat	immediately
		supp	suppository
		syr	syrup
ID	intradermal	tab	tablet
IM	intramuscular	tid	three times a day
IV	intravenous	tinct, tr	tincture
mEq	milliequivalent	U, u	unit
		ung	ointment
noc, noct, N	night	x	times
NPO, npo	nothing by mouth		
NS, N/S	normal saline		

OBJECTIVE 2

Complete Assignment Sheet 1.

OBJECTIVE 3

Identify the documentation necessary when obtaining a medication.

Required Activities/
Resources
- Discussion

Start with the questions "What are some methods used to order medications," "What different types of pharmacies do facilities use," and "Why is it important to sign for controlled substances?"

Any medication order must contain the following information:

- patient's full name
- date and time of order
- drug name
- drug dosage
- route of administration
- time and/or frequency of administration
- special instructions, if necessary
- physician's signature

OBJECTIVE 4

Required Activities/
Resources
- Discussion

Optional Activities/
Resources in
Instructor's Guide

Identify the documentation necessary when giving a medication.

Start with the questions "What are the five rights," "Why would I hold a medication," and "What would happen if I did not chart the reason for a hold on a medication?"

WORDS YOU SHOULD KNOW

hold	to not give an ordered medication
Kardex	filing system used to reference each patient's specific nursing care needs

- specific location of injections
- effects or absence of effects of medication
- signature of person administering medication
- medication that is ordered and not given

  ☑ **NOTE:** Include the reason for not giving the medication. The facility's policies should also cover temporary holding for tests, such as a patient who is NPO for morning lab work.

- patient teaching
  - ☐ Document the teaching goals on the Kardex or the chart.
  - ☐ Record a summary in the nurse's notes of the actual teaching that took place.
  - ☐ Objectively note the patient's response to the teaching.

OBJECTIVE 5

Required Activities/
Resources
- Discussion

Optional Activities/
Resources in
Instructor's Guide

Match systems of giving medications with their definitions.

Start with the questions "What is my role and responsibility for each type of order," and "Why are stat and prn orders recorded differently?"

- **one-time order** — instructions for a specific treatment or medication to be administered and not repeated

  ☑ **NOTE:** One-time orders are occasionally combined with stat orders. The most frequent one-time order is for pre-operative medication.

- **prn order** — an order to be given based on the patient's need

  ☑ **NOTE:** A prn order requires nursing judgement to determine if the drug should be administered. The physician will specify the dosage range, time frame, and any other factors to be considered in making these judgments.

- **routine order** — medication that is to be given to the patient regularly
- **self-terminating order** — an order that includes a specific time frame or number of doses to be administered
- **standing order** — any order that provides standard protocol for possible or commonly occurring events in patient care
- **stat order** — a one-time order which must be administered immediately

OBJECTIVE 6

Complete Assignment Sheet 2.

OBJECTIVE 7

Required Activities/ Resources - Discussion

Optional Activities/ Resources in Instructor's Guide

Identify steps necessary to transcribe medication orders.

Start with the questions "Why is legibility important," and "What are the essential parts of a medication order?"

- Receive the chart with the medication order from the physician.
- Read through the orders.
- Check each order for:
  - ☐ patient's name
  - ☐ drug name
  - ☐ dosage
  - ☐ route of administration
  - ☐ time and/or frequency of administration

  If the information is incomplete, notify the charge nurse or physician.

- Document order onto the Kardex, medication sheets, or cards.
- Check off the order on the physician's order sheet.
- Check transcribed orders against the physician's orders for accuracy (or have RN check, according to facility policy.)

- When all orders have been transcribed, place "noted," the date, the time, and your signature after each set of orders.

EXAMPLE: Noted 11-28-95 900A J. Johnson

OBJECTIVE 8

Complete Assignment Sheet 3.

OBJECTIVE 9

Identify assessment data to be included in a medication history.

Required Activities/
Resources
- Discussion

Optional Activities/
Resources in
Instructor's Guide

Your instructor will demonstrate the format used by your local facility

- patient allergies
- medications the patient has been taking (over-the-counter and prescription)
- outline of the patient's understanding of present medications
- routine of home administration

OBJECTIVE 10

Complete Assignment Sheet 4.

OBJECTIVE 11

Identify documentation requirements for verbal and telephone orders.

Required Activities/
Resources
- Discussion

Start with the questions, "How are verbal and telephone orders used," "How do these orders relate to me," and "How and when should I refuse a verbal or telephone order?"

☑ **NOTE:** As a student nurse, you must have a licensed nurse present to take and sign for actual verbal orders.

- Write down the order exactly as heard.
- Make sure the order has complete information for administration, including the time and date ordered.
- Repeat the order back to the physician.
- Document all appropriate information about the administration:
  - ☐ patient's name
  - ☐ drug name
  - ☐ dosage

  - ☐ route of administration
  - ☐ time and/or frequency of administration

- Have the physician co-sign the order within 24 hours.

OBJECTIVE 12 **Complete Assignment Sheet 5.**

OBJECTIVE 13 **Identify documentation requirements for storage, use, and waste of controlled substances.**

Required Activities/
Resources
- Discussion

Optional Activities/
Resources in
Instructor's Guide

Start with the questions "Why are controlled substances wasted," and "How does the system help prevent the illegal use of controlled substances?"

Federal law requires very accurate records covering the storage, use, and waste of controlled substances. Each time you administer these medications, the records must be completed with the following information:

- patient
- date and time
- medication
- amount
- person ordering
- person administering
- number remaining in the container
- wastage, if any

☑ **NOTE:** If a controlled substance has been wasted, give a reason for the waste and include the signature of a witness to the waste.

OBJECTIVE 14 **Complete Assignment Sheet 6.**

OBJECTIVE 15 **Complete Job Sheet.**

ASSIGNMENT SHEET 1

DOCUMENTING MEDICATIONS

2

Name ______________________________ Score __________

OBJECTIVE 2

Interpret written medication orders.

INSTRUCTIONS

Use the chart from objective 1 to write out the meaning of the following written orders.

Functional Reading
- Use content area vocabulary
- Interpret abbreviations/ acronyms

Language Skills
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Job Acquisition/ Development
- Master specific job task/procedure

1. Digitoxin 0.15 mg po qd

____

2. Dalmane 30 mg po HS prn sleep

____

3. Regular Humulin 28 u qd am

____

4. Codeine gr 1/4 IM q6h prn

____

5. Nitroglycerin gr 1/150 SL q5min X 3 prn chest pain

____

ASSIGNMENT SHEET 2

DOCUMENTING MEDICATIONS

2

Name ______________________________ Score __________

OBJECTIVE 6

Document administration of medication.

EQUIPMENT AND SUPPLIES

- Documentation form

INSTRUCTIONS

Using a form from your local facility, document that you gave the following medications to one patient, Mr. Asa Brown, on today's date.

1. 7:30 a.m. NPH insulin 34 units, in the right upper arm subcutaneous injection.
2. 8:00 a.m. and 12:00 p.m. Tagamet 300 mg. p.o. with meals
3. 9:00 a.m. Digoxin 0.125 mg. p.o. apical pulse rate = 72
4. 9:00 a.m. Catapres 0.1 mg p.o. held BP 90/44 (physician notified discontinued order)
5. 10:30 a.m. Demerol 50 mg. IM in left gluteus medius for pain in back relief in 1 hour
6. 11:00 a.m. Vistaril 50 mg. IM as one-time order for nausea relief in 30 minutes
7. 12:00 p.m. Heparin 5,000 units subq in left lower abdomen
8. 2:00 p.m. PPD 0.05 ml ID in left forearm
9. 2:30 p.m. Dulcolax supp.
10. 3:00 p.m. ASA gr. X p.o. for headache relief at 3:30 p.m.

Functional Reading
- Use content area vocabulary
- Interpret abbreviations/acronyms

Language Skills
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Job Acquisition/Development
- Master specific job task/procedure

ASSIGNMENT SHEET 3

DOCUMENTING MEDICATIONS

2

Name ______________________________ Score __________

OBJECTIVE 8

Transcribe medication orders.

EQUIPMENT AND SUPPLIES

- Kardex
- Medication card and/or sheet
- Pen

INSTRUCTIONS

Your instructor will give you a physician's order sheet with medication orders. Use the steps from objective 7 to transcribe the medication orders to the patient's Kardex.

Functional Reading
- Interpret forms and records
- Use content area vocabulary
- Interpret abbreviations/acronyms

Language Skills
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Job Acquisition/Development
- Master specific job task/procedure

DOCUMENTING MEDICATIONS

Name ______________________ Score __________

OBJECTIVE 10

Develop questions to obtain patient assessment data to be included in a medication history.

INSTRUCTIONS

Functional Reading
- Use content area vocabulary

Language
- Use standard grammar, spelling and capitalization

Listening
- Apply active listening skills

Interactive Communication
- Apply questioning techniques
- Communicate with clients/customers

Part 1

Write questions that would provide you with the best answers about the general information listed. You may use yes/no or open-ended questions.

1. Determine any medications the patient is currently taking. This should include both over-the-counter and prescription medications.

2. Determine the schedule on which the patient has been taking the medications at home.

3. Determine the patient's understanding of the purpose of each medication.

Cognitive Activities
- Collect/record information
- Identify critical elements/issues
- Create a finished product (written, oral, practical)

Job Acquisition/ Development
- Master specific job task/procedure
- Practice good work habits/attitudes
- Deal effectively with customers/clients

4. Determine whether the patient has brought any medications from home (follow policy for storage of any medications.)

5. Determine any medications the patient may have been taking for a prolonged period of time.

6. Determine any known allergies the patient has to medication or food.

7. Determine medications that are effective or ineffective for the patient.

Part 2

Interview one person using the questions you have written. Follow the instructor's directions for specifics. Once the interview has taken place, use the following page to comment on how the questions could be improved.

ASSIGNMENT SHEET 5

DOCUMENTING MEDICATIONS

2

Name ______________________________ Score __________

OBJECTIVE 12

Document verbal and telephone orders.

EQUIPMENT AND SUPPLIES

- Physician's order sheet

INSTRUCTIONS

Your instructor will read orders or provide a tape for you to play. Document the orders as they are received.

Language
- Use standard grammar, spelling and capitalization
- State ideas clearly

Research
- Take notes

Functional Writing
- Complete forms and records

Listening
- Apply active listening skills

Interactive Communication
- Give/follow oral directions

Cognitive Activities

- Collect/record information
- Create a finished product (written, oral, practical)

Job Acquisition/ Development

- Master specific job task/procedure
- Practice good work habits/attitudes

ASSIGNMENT SHEET 6 — DOCUMENTING MEDICATIONS

Name ______________________________ Score __________

OBJECTIVE 14

Document the storage, use, and waste of controlled substances.

INSTRUCTIONS

Document the following doses of controlled substances, placing the information in the correct area on the controlled substance usage record on the following page. Make a note of the drugs that require waste, and document the amount of the waste on wastage forms.

Dr. Smith's patients.

1. Jane Baker—Demerol 75 mg IM at 7:55 a.m. Dose on hand = 75 mg/cc
2. Hugh Tebone—Morphine 6 mg IM at 8:30 a.m. Dose on hand = 10 mg/cc
3. Pamela Seibel—Percodan tabs ii p.o. at 9:00 a.m.
4. Jack Brown—Tylenol #3 i tab p.o. at 11:35 a.m.
5. Leroy Zarzour—Valium 5 mg IM at 1:20 p.m. Dose on hand = 10 mg/2cc

☑ **NOTE:** Read the on hand dosage of each drug, and record each tablet on an individual line.

Functional Reading
- Use content area vocabulary
- Interpret abbreviations/ acronyms

Language Skills
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Job Acquisition/ Development
- Master specific job task/procedure

Controlled Substance Usage Record

Date & Time	Patient	Medication	Dosage	Amount left in container	Physician	Signature

JOB SHEET 1

DOCUMENTING MEDICATIONS

Name ______________________________

OBJECTIVE 15

Count controlled substances.

EQUIPMENT AND SUPPLIES

- Controlled substance folder (may vary with facility)
  - ☐ Sign out sheets for several substances
  - ☐ Count record sheet
- Locked box, cabinet, or drawer
- Key(s)

☑ **NOTE:** Two keys are required by many agencies.

- Sample containers of controlled substances
  - ☐ Multidose bottles
  - ☐ Unit dose packages
  - ☐ Ampules
  - ☐ Liquid medications
- Two participants
  - ☐ one representative of off-going shift
  - ☐ one representative of on-coming shift

PROCEDURE

Reading Comprehension
- Gain factual information

Functional Reading
- Interpret forms and records
- Use content area vocabulary
- Interpret abbreviations/acronyms

☑ **NOTE:** Both the off-going shift nurse and the on-coming shift nurse must be present before the count begins.

Off-going Shift	On-coming Shift
____ 1. Unlock controlled substance cabinet	____ 1. Obtain controlled substance folder
____ 2. Read controlled substance folder for number recorded as on hand for each substance	____ 2. Count each substance
____ 3. Count each substance	____ 3. Read controlled substance folder for number recorded as on hand for each substance

Functional Writing
Complete forms and records

Listening
- Apply active listening skills

Interactive Communication
- Communicate with co-workers

Cognitive Activities
- Collect/record information
- Create a finished product (written, oral, practical)

Job Acquisition/ Development
- Master specific job task/procedure
- Practice good work habits
- Deal effectively with co-workers

____ 4. Verbally state number on hand	____ 4. Verbally confirm number on hand
____ 5. If count differs a. Recount b. Look at options for patients that may have received medications c. Check with each staff member for possible error d. Follow facility policy if unable to locate e. Document each correction and/or action for correction	____ 5. If count differs a. Recount b. Accept as correct only after corrections are documented
____ 6. Verify all substances stored correctly	____ 6. Verify all substances stored correctly
____ 7. Document count as correct	____ 7. Document count as correct
____ 8. Give keys to on-coming shift	____ 8. Accept keys from off-going shift

SKILL TEST RECORD

EVALUATOR'S COMMENTS

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Key below.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** – Can perform job with no additional training.
3 **Moderately Skilled** – Has performed job during training program; limited additional training may be required.
2 **Limited Skill** – Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** – Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

OBJECTIVE SHEET

IDENTIFYING CLASSIFICATION AND EFFECTS OF MEDICATIONS

3

INTRODUCTION

Administering medications is one of the most important functions you will perform as a practical nurse. When administering medications or working with patients on medication, you will often need to assess the patient's need for medication, teach the patient about specific drugs, and evaluate the effectiveness of medications. To apply the total nursing process as it relates to medications, you must know the classifications and effects of medications.

PREREQUISITE

"Calculating Medication Dosages" and "Documenting Medications"

FOCUS ASSIGNMENTS

Reading Comprehension
- Gain factual information
- Analyze cause and effect
- Draw conclusions

Language
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Composition
- Use complete sentences

FOCUS ASSIGNMENTS	
PREREADING:	Use a drug reference book to research any drug. This may be a medication you or someone you know has taken.
WRITING:	Write a short (one paragraph to one page) description of how the drug works and what drugs it is incompatible with. What would happen if a person taking this drug took an incompatible drug?

UNIT OBJECTIVE

After completing this unit, you will show the following competencies by mastering the activities on the Assignment and Job Sheets and by scoring at least 85% on the Written Test.

SPECIFIC OBJECTIVES

1. Identify ways drugs are classified.
2. Identify general purposes for which medications are given to patients.
3. Differentiate between systemic and local effects of medications.
4. Identify therapeutic effects of the most common classes of medications.
5. Identify side effects of the common classifications of medications.
6. Identify contraindications of the common classifications of medications.
7. Identify common drugs within each classification of medication.
8. Identify the nursing actions for common classifications of medications.
9. Identify drug factors and patient assessment data which influence selection and administration of medication.
10. Use references to obtain information about drugs. (Assignment Sheet 1)
11. Use references to develop patient instruction for medication. (Assignment Sheet 2)

INFORMATION SHEET

IDENTIFYING CLASSIFICATION AND EFFECTS OF MEDICATIONS

3

OBJECTIVE 1

Required activities/ resources - discussion

Identify ways drugs are classified.

Your instructor will give examples of drugs and their classifications.

- principal action on the body

  EXAMPLE: analgesic, anti-diarrheal

- specific organ or body system acted on

  EXAMPLE: cardiovascular drugs, gastrointestinal drugs

- form of drug preparation

  EXAMPLE: tablets, ointments

- method of obtaining drug
  - over-the-counter (OTC) — medication which may be purchased with no prescription
  - prescription — medication that must be prescribed by a physician
  - legend — medication which requires a prescription because of the possible harmful effects of taking the drug indiscriminately
  - controlled substance — medication that requires a prescription because of the danger of the client abusing the drug or becoming addicted to the drug
  - illegal — drugs that are illegal to use and are obtained by illegal means

OBJECTIVE 2

Required activities/ resources - discussion
Optional activities/ resources in Instructor's Guide

Identify general purposes for which medications are given to patients.

Start with the question "What are some examples of drugs used for each purpose?"

Medications are given to clients for several reasons. Five of the most common general purposes include

- prevention

  EXAMPLE: vaccine

- diagnosis

  EXAMPLE: dyes for x-ray purposes

- treatment of symptoms

  EXAMPLE: analgesic

  NOTE: Medications that relieve symptoms without affecting the disease are called *palliative* medications.

- replacement

  EXAMPLE: vitamin supplement

- cure

  EXAMPLE: antibiotic

OBJECTIVE 3

Differentiate between systemic and local effects of medications.

Required activities/
resources - discussion
Optional activities/
resources in
Instructor's Guide

Start with the questions "What are examples of local and systemic effects of drugs," "What is the relationship between systemic effects, therapeutic effects, and side effects," and "What drugs are given in the local facility using load doses of medication?"

- Systemic effect — Regardless of where the medication enters the body, it affects the whole body.

- Local effect — The medication's effect is limited only to the area where it is administered.

  NOTE: Most medications have systemic effects; a few, such as ointments, have a local effect.

OBJECTIVE 4

Optional activities/
resources in
Instructor's Guide

Identify therapeutic effects of the most common classes of medications.

WORDS YOU SHOULD KNOW	
therapeutic effects	effects of drugs which prevent, diagnose, or treat diseases or conditions

See the chart after objective 8.

OBJECTIVE 5

Optional Activities/
Resources in
Instructor's Guide

Identify side effects of common classifications of medications.

WORDS YOU SHOULD KNOW	
anaphylaxis	systemic hypersensitivity reaction
side effect	drug-induced effect other than the desired therapeutic effects

See the chart after objective 8.

OBJECTIVE 6

Optional Activities/
Resources in
Instructor's Guide

Identify contraindications of the common classifications of medications.

WORDS YOU SHOULD KNOW	
contraindication	condition that makes the use of a particular drug or treatment dangerous or ill-advised

See the chart after objective 8.

OBJECTIVE 7

Optional Activities/
Resources in
Instructor's Guide

Identify common drugs within each classification of medication.

WORDS YOU SHOULD KNOW	
indications	reasons to use a particular drug

See the chart after objective 8.

OBJECTIVE 8

Optional Activities/
Resources in
Instructor's Guide

Identify the nursing actions for common classifications of medications.

WORDS YOU SHOULD KNOW	
tolerance	a property of some drugs in which the drug's effects decrease after repeated doses, making an increase in the dosage amount necessary to obtain the desired effect

See the chart following.

STUDENT WORKBOOK - Pharmacology
INFORMATION SHEET - CIMC - 3 - 7

CLASSIFICATION	ACTION	INDICATIONS	SIDE EFFECTS	CONTRAINDICATIONS	NURSING ACTIONS	EXAMPLES
Adrenal corticosteroids	anti-inflammatory	reduce organ transplant rejection, arthritis, allergies, Addison's disease, cerebral edema, collagen disorders, hematologic disorders	adrenocortical insufficiency, susceptibility to infection, osteoporosis, fluid and electrolyte imbalance	long-term use, infections, hypothyroidism, hypertension, CHF psychosis, diabetes, children, pregnancy	do not stop abruptly, oral doses with meals, watch for infections, take only as ordered	dexamethasone, hydrocortisone, methylpredniolone, prednisone
Adrenergics	mimic the sympathetic nervous system	cardiac arrest, increase B/P, in shock constrict capillaries, dilate bronchioles and pupils	arrhythmias, raises B/P, tremors, H/A, angina, tissue necrosis	angina, hypertension, glaucoma, arrhythmias, organic brain damage	monitor vital signs	epinephrine, dopamine, isoproterenol, norepinephrine
Analgesics	relief of pain					
A. **Narcotic analgesics**	alters perception of pain	severe or chronic pain	sedation, confusion, H/A, agitation, lowers B/P, respiratory depression, dependence, N/V	head injury, CNS, depression, hepatic and renal disease, addiction prone	monitor respiration, do not give if less than 12	meperidine, codeine, morphine, hydromorphine
B. **Non-narcotic analgesics**						
1. **Salicylates**	associated with inhibition of prostaglandin	pain, inflammation, fever	prolonged bleeding time, ulceration, tinnitus	GI ulcer or bleeding, anticoagulants, Hodgkin's disease, asthma, children with viral infections	give with food; keep out of reach of children	acetylsalicylic acid (aspirin)
2. **Acetaminophen**	similar salicylates	moderate pain, fever	liver toxicity, rash, urticaria	alcoholism		acetaminophen
3. **Ibuprofen**	similar to salicylates	moderate pain, fever	prolonged bleeding time	heart, kidney, or liver disorders, children with viral infections, GI ulcer	give with food	ibuprofen
Androgens	stimulate development of male characteristics	replacement therapy in hypogonadism, endometriosis, fibrocystic breast disease, post-partum breast engorgement	edema, acne, oligospermia, change in libido, gynecomastia in male, female develop male characteristics, jaundice, N/V	heart, kidney, or liver disorders, geriatric males, prepubertal males	discuss effects	testosterone, methyltestosterone

CLASSIFICATION	ACTION	INDICATIONS	SIDE EFFECTS	CONTRAINDICATIONS	NURSING ACTIONS	EXAMPLES
Anesthetics	produces loss of sensation, muscle relaxation, loss of consciousness	local and general anesthesia	vary with drug		give only with special training	lidocaine, procaine, HC1, nitrous oxide, halothane
Antacids	neutralize gastric hydrochloric acid	relief of indigestion; relieve pain and promote healing of ulcers	constipation, diarrhea, electrolyte imbalance, calculi, intestinal gas	CHF, renal disease, cirrhosis, dehydration	discuss OTC use and compatibility with other medications	aluminum calcium carbonate (combinations)
Antianxiety agents (minor tranquilizers)	reduce anxiety and promote relaxation without sedation	short-term treatment of anxiety disorders, neuroses, psychosomatic disorders, insomnia	depression, H/A, lethargy, confusion, tremor, rash, photosensitivity	depression, suicidal tendencies, depressed VS, liver and kidney dysfunction, pregnancy, elderly	caution about operating machinery	alprazolam chlordiazepoxide diazepam hydroxine, meprobamate
Antiarrhythmics	act to suppress cardiac arrhythmias (differs by drug)	cardiac arrhythmias	lowers B/P, slow heartbeat, tachycardia cardiac arrhythmias		monitor VS	lidocaine, procainamide, quinidine
Anticoagulants	prevent clots or decreases extension of existing clots					
A. Coumarin	interferes with the action of Vitamin K	long-term anticoagulant therapy	minor bleeding to severe hemorrhage	GI disorders, kidney and liver dysfunction, blood dyscrasias, preoperative	oral form only; monitor PT; antidote: Vitamin K	coumadin
B. Heparin	acts on thrombin; inhibits the action of fibrin in clot formation	venous thrombosis, pulmonary embolism; coronary occlusion	minor bleeding to severe hemorrhage	GI disorders, kidney and liver dysfunction, blood dyscrasias, preoperative	IV or subcutaneous use, antidote; protamine sulfate; monitor PTT	heparin
Anticonvulsants	reduce number and/or severity of seizures	epilepsy, lesions to temporal lobe of the brain	sedation, nystagmus, GI distress, rash, anemia	kidney or liver disease, CHF, hypotension	avoid oversedation	phenytoin, primidone, phenobarbital
Antidepressants (mood elevators)	various types of depression					
A. Tricyclics	delayed action, elevate mood, increase alertness		anticholinergic effects	cardiac, renal, or liver disorders, elderly, glaucoma	given at bedtime	amitriptyline, doxepin, imipramine

CLASSIFICATION	ACTION	INDICATIONS	SIDE EFFECTS	CONTRAINDICATIONS	NURSING ACTIONS	EXAMPLES
B. **MAO inhibitors**	blocks monoamine oxidase	used if tricyclics not effective	adrenergic effects	cardiac and liver disease	watch for drug and food interactions, especially foods with tyramine such as cheese, chocolate, caffeine	isocarboxozid phenelzine sulfate
Antidiarrhea agents	vary with medications	increased number of loose stools	transient constipation	infants and elderly if not under medical supervision	adequate fluid intake, bland diet	kaoline and pectin, diphenoxylate catropine
Antiemetics	vary with medication	prevent or treat nausea, vomiting, motion sickness	sedation, vertigo, dry mouth, extrapyramidal reactions	small children, pregnancy, debilitation, glaucoma, prostatic hypertrophy	assess for cause of nausea	prochlorperazine, promethazine, dimenhydrinate
Antiflatulents	break up gas bubbles in GI tract	gastric bloating	rare	colic	discuss gas forming foods	simethicone
Antihelmintics	evacuates worm infestation	helminth infestation	varies with drug		recheck for parasite	piperazine, mebendazole, pyrvinium pamoate
Antihistamines	antagonize histamine receptor sites, combat increased capillary permeability, edema, inflammation, and itch	symptomatic relief of allergic symptoms, common cold	drying of secretions, sedation, weakness, constipation, insomnia	COD, asthma, heart disorders, elderly CV disorders, CNS depressants, hypertension	discuss rebound effect, caution if using machinery	diphenhydramine, chlorpheniramine, promethazine
Antihypertensives (hypotensives)	varies with drug	hypertension				
A. **Rauwolfia alkaloids**	inhibits sympathetic nervous system		slow action, sedation, sexual dysfunction, GI dysfunction	ulcers or colitis, depression, renal dysfunction, epilepsy	check heart rate; keep in airtight, light resistant container	reserpine
B. **Beta-adrenergic and calcium blockers**	(See separate listing) block action of sympathetic nervous system	hypertension, bronchoconstriction		chosen on individual basis	monitor heart rate and blood pressure	propranolol, atenolol, labetalol
Anti-infective agents (antibiotics)	fights infection	specific infection	allergic hypersensitivity, direct toxicity, superinfection	known allergy or allergy to similar drug	culture prior to drug administration, adequate fluid intake	

CLASSIFICATION	ACTION	INDICATIONS	SIDE EFFECTS	CONTRAINDICATIONS	NURSING ACTIONS	EXAMPLES
A. **Aminoglycosides**	gram-negative and gram positive bacteria (antibiotic)	short-term serious infections	kidney damage, ear disturbances, respiratory paralysis, CNS symptoms	tinnitus, hearing loss, kidney dysfunction, dehydration	I & O, report side effects	gentamycin, neomycin, tobramycin
B. **Cephalosporins**	broad spectrum antibiotic	serious infections of respiratory tract, urinary tract, bones, joints, endocarditis, septicemia, PID, meningitis	liver dysfunction, GI distress, local irritation, blood dyscrasias	allergy (to penicillin also), prolonged use	add cultured dairy products to diet	cephalexin, cefotaxime, cephamandole
C. **Chloramphenicol**	toxic antibiotic	serious infections where less toxic drugs ineffective, typhoid fever, meningitis, rickettsial infections, bacteremia	bone marrow depression, aplastic anemia, circulatory collapse, neuritis		warnings to patient of severe side effects	chloramphenicol
D. **Erythromycins**	antibiotic	infections of skin, respiratory tract, STD	GI distress, uticaria, rash, superinfections	liver dysfunction, alcoholism	give with full glass of water	erythromycin
E. **Penicillins**	antibiotic effective against streptococcal and some staphylococcal and meningococcal infections	gonorrhea, syphilis, rheumatic fever, respiratory and intestinal infections	rash, anaphylaxis, GI distress, fever, blood dyscrasias	history of allergy	give on empty stomach with full glass of water	amoxicillin, penicillin G procaine, carbenicillin
F. **Tetracyclines**	broad-spectrum antibiotics	bacterial infections, atypical pneumonias, STD, acne	GI distress, superinfections, photosensitivity, discolored teeth in young children	children under 8, exposure to sunlight, pregnancy	avoid dairy food, iron and antacids within 3 hours	tetracycline, doxycycline, oxytetracycline
G. **Antifungals**	varies with medication	susceptible fungi	varies with drug		expose affected area if possible	amphotericin B, griseofulvin, nystatin
H. **Antituberculosis agents**	prevent or cure tuberculosis	tuberculosis	GI distress, liver toxicity, fatigue	liver disease, kidney disease	discuss importance of remaining on treatment	isoniazid, ethambutol, rifampin
I. **Antivirals**	relieve symptoms of viral infection	herpes simplex, herpes zoster	renal dysfunction, lethargy, rash, GI distress, blood dyscrasias	kidney or liver disease, dehydration, neurologic abnormalities	apply with finger cot or glove, keep out of eyes	acyclovir

CLASSIFICATION	ACTION	INDICATIONS	SIDE EFFECTS	CONTRAINDICATIONS	NURSING ACTIONS	EXAMPLES
J. Sulfonamides	antibiotic	nonobstructive urinary tract infections	rash, GI distress, fever, jaundice	liver and kidney disease, blood dyscrasias, allergy	stress large amounts of fluid	sulfasalazine, sulfasoxazole, co-trimoxazole
K. Urinary anti-infectives	bacteriostatic	urinary tract infections	N/V, weak lower extremities, brown urine, anemia, respiratory distress	asthma, anemia, diabetes, kidney impairment, electrolyte imbalance	give with food or milk	nitrofurantoin
Anti-inflammatory agents	decrease inflammation	musculoskeletal inflammation				
A. Non-steroidal anti-inflammatory drugs	inhibit synthesis of prostaglandin	rheumatic disorders; sprains, menstrual cramps	GI ulcers and bleeding, constipation, tinnitus, H/A, hematuria, nervousness, rash	heart, liver, or kidney disorders, ulcers, blood dyscrasias, children with viral infections	give with food, watch for bleeding	ibuprofen, indomethacin, naproxin, phenylbutazone
B. Steroids	(See separate listing)					
Antineoplastic agents	counteract malignant cells	cancer	immunosuppression, GI distress, hair loss	pregnancy	provide comfort measures by client need	fluorouracil, methotrexate, vincristine, doxorubicin, prednisone
Antiparkinsonian drugs	relieve symptoms of Parkinson's disease	Parkinson's disease	varies with drug		give with food, maintain dosage	levodopa, bromocriptine, trihexyphenidyl
Antipruritics	relieve itching	dermatitis from hives, allergic reactions, poison ivy, and insect bites	skin irritation, stinging, allergies	prolonged use, allergy (-caines)	avoid mucus membranes	benzocaine, calamine, corticosteroid
Antipsychotics	relieve anxiety, modify disturbed behavior	psychoses, neuroses, nausea, and vomiting	postural hypotension, dry mouth, extrapyramidal symptoms	severe depression	be aware of habituation and addiction	chlorpromazine, haloperidol, thioridazine, stelazine
Antipyretics	reduce fever	febrile conditions	same as non-narcotic analgesics	GI bleeding	assess for source of fever	acetaminophen, aspirin
Antiseptics	inhibit growth of bacteria	surgical scrubs, skin cleansers	dermatitis, redness, varies with drug	allergy	rinse thoroughly	hexachlorophene, iodine

CLASSIFICATION	ACTION	INDICATIONS	SIDE EFFECTS	CONTRAINDICATIONS	NURSING ACTIONS	EXAMPLES
Antithyroids	relieves symptoms of hyperthyroidism	preparation for surgical or radioactive iodine therapy	rash, urticaria, blood dyscrasias	prolonged therapy over 40 years old	have client notify of illness	methimazole, propylthiouracil
Antitussives	prevent coughing	nonproductive cough, pleurisy, fractured ribs	respiratory depression, constipation, sedation, NV, GU retention	asthma, COPD	avoid other CNS depressants, increase fluid intake	codeine, hydrocodone, dextromethorphan, diphenhydramine
Antiulcer agents	reduce gastric acid secretion	duodenal and gastric ulcers, GI hypersecretion, esophagitis, upper GI bleeding	diarrhea, dizziness, confusion	kidney or liver disorders	discuss causes of stress	ranitidine, cimetidine
Beta-adrenergic blockers	block the sympathetic nervous system	hypertension, arrhythmias, angina, migraines	hypotension, bronchoconstriction	chosen on assessment of cardiac function	monitor heart rate and blood pressure	propranolol, atenolol, labetalol
Calcium channel blockers	suppress action of calcium on myocardium, decrease cardiac excitability, dilate coronary arteries	arrhythmias, angina, hypertension	hypotension, bradycardia, constipation	heart block or failure, liver or kidney impairment	monitor VS	verapamil
Cardiac glycosides (cardiotonics)	increase force of myocardial contraction	congestive heart failure	N/V, diarrhea, fatigue, restlessness, bradycardia, tremors	pulmonary disease, hypothyroidism, acute MI, myocarditis, glomerulonephritis	teach side effects, avoid OTC drugs, take apical pulse—if less than 60, do not give	digoxin, digitoxin
CNS stimulants	promote CNS functioning	overdose, alcoholic stupor, neonatal apnea	nervousness, tachycardia, changes in B/P, dizziness, GI distress	anxiety, drug dependence, heart or kidney disorders, diabetes, glaucoma, hyperthyroidism	watch for tolerance	caffeine, sodium benzoate, amphetamines, methylphenidate
Cholinergics	mimic the parasympathetic nervous system	abdominal retention, myasthenia gravis, open-angle glaucoma insecticide, nonobstructive urinary retention	GI distress, sweating, salivating, bronchial constriction, tachycardia	GI or GU obstruction, hyperthyroidism, peptic ulcer, heart disease, asthma	report side effects, give drug alone	bethanecol, neostigmine, pilocarpine

CLASSIFICATION	ACTION	INDICATIONS	SIDE EFFECTS	CONTRAINDICATIONS	NURSING ACTIONS	EXAMPLES
Cholinergic blockers (anticholinergics).	block the parasympathetic nervous system	GI or GU hypermotility, pre-op, drug induced parkinsonism, spastic disorders, urinary bladder spasm	dry mouth, constipation, fever, confusion, H/A, tachycardia	chronic pulmonary disease, glaucoma, GI or GU obstruction, arrhythmias, B/P	advise client of side effects	atropine, glycopyrrolate, methanelamine
Diuretics	increase urine output	excess fluid				
A. **Thiazide**	increase water, sodium, chloride, and potassium excretion	edema, hypertension, prophylaxis of stone formulation	hypokalemia, hypotension, fatigue, GI distress, H/A	diabetes, gout, liver or kidney disease, prolonged use	give potassium foods, I&O	chlorothiazide, hydrochlorothiazide
B. **Nonthiazide**	rapid excretion of water, sodium, chloride, and potassium	CHF, pulmonary edema, ascites, hypertension	dehydration, hypokalemia, hypotension, GI effects, hyperglycemia, tinnitus	liver or kidney disease, dehydration, diabetes, gout, digitalized patients	I&O, give potassium foods, monitor weight	furosemide, ethacrynic acid
C. **Potassium sparing**	increase sodium and water excretion	high aldosterone levels	hyperkalemia, dehydration, GI distress, hypotension, fatigue	renal insufficiency, cirrhosis, and liver disease	withhold potassium foods, I&O, monitor weight	spironolactone, triamterene
D. **Osmotic**	combines with water to increase excretion	elevated intracranial pressure	fluid and electrolyte imbalance, CNS symptoms, tachycardia, B/P changes, allergy	kidney, heart, or liver disease	close medical supervision required	mannitol, urea
Emetics	induce vomiting	some poisonings	dehydration, increases B/P	heart disease; ingestion of corrosive, petroleum or convulsant substance; semiconscious	follow directions on drug, determine source of poison	ipecac syrup
Emollients and demulcents	protect or soothe minor skin conditions	diaper rash, abrasions, minor burns	rare	history of allergy	apply by instructions	vitamin A & D ointment
Estrogens	female hormone; inhibit lactation, inhibit ovulation, develop secondary sex characteristics	contraception, menopause, hypogonadism, nonnursing mothers	thromboembolic disorders, GI effects, increases B/P, edema, migraine, irregular menstruation, liver disease	MI, stroke, embolus, liver or kidney disease, breast nodules, surgery, hypertension, asthma, seizures	instruct client to follow directions	chlorotrianisene, diethylstilbestrol, conjugated estrogens

CLASSIFICATION	ACTION	INDICATIONS	SIDE EFFECTS	CONTRAINDICATIONS	NURSING ACTIONS	EXAMPLES
Expectorants	increase pulmonary secretion, reduce viscosity, and help expel sputum	coughs associated with URI, bronchitis, sinusitis, and COPD	N/V, stomatitis, rhinorrhea, drowsiness	some asthmatics, CV disease, hypertension, diabetes	prevent prolonged self administration	guaifenesin, terpin hydrate
Gout medications	lower uric acid levels	gout				
A. Uricosuric agents	block reabsorption, promote urinary excretion of uric acid	chronic gout or chronic gouty arthritis	H/A, N/V, kidney stones, renal colic	uric kidney stones, peptic ulcer, renal impairment	give large amounts of fluid, give with food	probenecid, sulfinpyrazone
B. Allopurinol	decreases serum and urine levels of uric acid	chronic gout	rash, allergic reactions	liver or kidney disease, allergy	give after meals, increase fluid intake	allopurinol
C. Colchicine	relieve inflammation of gout	acute gout prophylaxis	rash, GI upset, blood disorders		increase fluid intake	colchicine
Insulin	lower blood glucose level	IDDM, type I diabetes	hypoglycemia, irritability, tremors, H/A, convulsion	low blood sugar	provide sugar for symptoms; use precautions when administered	regular, NPH, Lente, ultralente
Kerotolytics	control abnormal scaling of the skin or promote peeling of the skin	dandruff, seborrhea, psoriasis, acne, corns, calluses, warts	skin irritation, photosensitivity, allergic, susceptibility to cancer	prolonged use, small children	avoid mucous membranes, use care in application to affected area only	coal tar, salicylic acid, sulfur
Narcotic antagonists	works to counteract effects of narcotics	narcotic overdoses, delivery and nursery post-op	tremors, N/V, reversal of analgesia	non-opoid respiratory depression	keep resuscitation equipment on hand	naloxone, nalorphine
Laxatives	promote evacuation of the intestine	constipation	diarrhea, electrolyte imbalance, cramping	prolonged use, undiagnosed abdominal pain	teach natural methods of constipation treatment	psyllium, docusate, milk of magnesia, senna
Ophthalmic drugs	varies with drug	eye disorders				
A. Antiglaucoma agents	reduce intraocular pressure	glaucoma	differs with drug and type of glaucoma		administer by package directions	acetylzolamide, pilocarpine, timolol
B. Mydriatics	dilate the pupil	eye examination	increases intraocular pressure, fever, dry skin	angle-closure, glaucoma, infants	apply aseptically	atropine, epinephrine

CLASSIFICATION	ACTION	INDICATIONS	SIDE EFFECTS	CONTRAINDICATIONS	NURSING ACTIONS	EXAMPLES
Oral hypoglycemics	stimulate secretion of insulin by the pancreas	NIDDM (type II diabetes)	GI distress, skin disorders, blood dyscrasias, hypoglycemia	debilitation, IDM, major physical stress, liver or kidney dysfunction	instruct on diet, importance of regular dosage	chlorpropamide, tolazamide, tolbutamide, glyburide
Pediculicides and scabicides	kills mites and lice infestations	pediculoses, scabies	local irritation, dermatitis	raw, inflamed skin	topical use only	lindane, benzyl benzoate
Progestines	hormone acting on uterus and mammary glands	amenorrhea, uterine bleeding, contraception (with estrogen), metastatic endometrial or renal cancer	Menstrual irregularity, H/A, edema, depression, rash, breast tenderness, nausea	conditions with danger if fluid retained, history of embolus, pregnancy, nursing mothers	teach self breast exam; dosage at same time every day	progesterone
Sedatives and hypnotics	promote sedation or sleep	pre-op, seizures, insomnia, anxiety				
A. Barbiturates	CNS depression	anxiety	"hangover," N/V, rash, confusion, respiratory depression	prolonged use, addiction-prone, depression	observe respiration and for dependence	pentobarbital, phenobarbital, secobarbital
B. Non-barbiturates	CNS depression	anxiety, promote euphoria	N/V, rash, confusion, ataxia, dizziness	prolonged use, dependence, debilitation, elderly	prevent falls, watch for tolerance	flurazepam, ethclorbynol, chloral hydrate
Serums	provide passive immunity from antibodies produced by another organism	immediate immunity, inability to produce antibodies	serum sickness (especially equine serum)		watch for allergic reaction and serum sickness	gamma globulin, hepatitis B immune globulin
Skeletal muscle relaxants	act on spinal cord, brain and peripheral areas to reduce spasm and rest affected part	acute, painful musculoskeletal conditions, neck strain or backache	drowsiness, weakness, H/A, confusion, lowers B/PO, GI distress, respiratory depression	muscular dystrophy, myasthenia gravis, under 12 years old	instruct on doctor's orders for physical therapy	diazepam, methocarbamol, carisoprodol, cylobenzaprin
Somatotropin	promote linear growth	growth failure	pain at injection site, hypercalciuria	brain tumor, no response in one year, diabetes	report urinary symptoms	somatotropin
Thyroid agents	replacement of thyroid hormone	diminished or absent thyroid function, myxedema cretinism	arrhythmias, fever, weight loss, menstrual irregularities, diarrhea	cardiovascular disease, elderly, adrenal insufficiency, diabetes euthyroid	report symptoms	levothyroxin, thyroid

CLASSIFICATION	ACTION	INDICATIONS	SIDE EFFECTS	CONTRAINDICATIONS	NURSING ACTIONS	EXAMPLES
Vaccines	antigen which causes the body to produce antibodies to a specific disease	active immunity against common infectious diseases	varies with vaccine	history of allergy	instruct to keep record	DPT, MMR, influenza vaccine, TOPV
Vasodilators	dilate blood vessel					
A. Coronary	dilate coronary arteries	angina	H/A, postural hypotension, dry mouth, flushing	glaucoma, increased intracranial pressure, anemia	assist to rise slowly, monitor B/P	nitroglycerine, isosorbide
B. Peripheral	dilate peripheral vessels	arteriosclerosis, gangrene, scleroderma, Buerger's disease, Raynaud's disease, frostbite, thrombophlebitis	increased secretions, H/A, dizziness, blood dyscrasias, arrhythmias	gastritis, peptic ulcer, coronary artery disease, CVA	teach side effects	tolazoline
Vitamins and minerals	varies with vitamin or mineral supplement to diet	inadequate diet, malabsorption syndrome, increased need for specific nutrient deficiency due to medication interaction	varies with vitamin	Hypervitaminosis	teach adequate diet intake if appropriate	vitamins A, D, B, E, K, C, potassium, iron, calcium

OBJECTIVE 9

Optional Activities/
Resources in
Instructor's Guide

Identify drug factors and patient assessment data that influence selection and administration of medication.

- drug factors
    - ☐ effects of the medication
    - ☐ side effects
    - ☐ contraindications
    - ☐ route of availability of the medication
    - ☐ dependability of medication's absorption into the system
    - ☐ method of distribution of the medication
    - ☐ method of excretion of the medication
- patient assessment data
    - ☐ age

        ☑ **NOTE:** Children and elderly people generally need lower dosages.

    - ☐ body size
    - ☐ sex

        ☑ **NOTE:** The sex of the patient may influence the choice because of hormonal differences and the ratio of fat per body mass.

    - ☐ physiologic state

        ☑ **NOTE:** Physiologic state includes the physical ability to absorb, distribute, metabolize, and excrete a medication.

    - ☐ patient's belief in the effectiveness of the medication

ASSIGNMENT SHEET 1

IDENTIFYING CLASSIFICATION AND EFFECTS OF MEDICATIONS

3

Name ______________________________ Score __________

OBJECTIVE 10

Use references to obtain information about drugs.

WORDS YOU SHOULD KNOW	
generic name	the most commonly used name by health care professionals regardless of the manufacturer of the drug, not capitalized
trade name	the registered name that the drug manufacturer assigns to their product

EQUIPMENT AND SUPPLIES

- Drug reference book

INSTRUCTIONS

Use a drug reference book to look up the medications and answer the questions below.

Reading Comprehension
- Gain factual information

Research and Reference
- Select useful resources

Functional Reading
- Use content area vocabulary

1. Look up the following trade names. Write the generic name of the medication in the blank.

a. Ecotrin® ______________________________

b. Xylocaine® ______________________________

c. Duramorph® ______________________________

d. Nembutal® ______________________________

e. Dilantin® ______________________________

f. Keflin® ______________________________

g. Furadantin® ______________________________

h. Zantac® ______________________________

i. Phyllocontin® ______________________________

j. Kwell® ______________________________

Language
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Life Science
- Investigate health issues

Cognitive Activities
- Collect/record information
- Identify critical elements/ issues
- Create a finished product

Job Acquisition/ Development
- Practice good work habits/ attitudes

2. Look up the following generic drug names. Write one trade name of each drug in the blank.

a. acyclovir sodium ____________________

b. dopamine ____________________

c. minoxidil ____________________

d. meperidine ____________________

e. diazepam ____________________

f. warfarin sodium ____________________

g. silver sulfadiazine ____________________

h. reserpine ____________________

i. cimetidine ____________________

j. naproxen ____________________

3. Your patient is taking fenoprofen calcium for osteoarthritis. He tells you he would like to take Tylenol® for occasional headaches. What would you tell him?

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4. Your patient is taking oral contraceptives. The physician has prescribed ampicillin for an infection. What should you tell her?

ASSIGNMENT SHEET 2

IDENTIFYING CLASSIFICATION AND EFFECTS OF MEDICATIONS

Name ______________________________ Score __________

OBJECTIVE 11 **Use references to develop patient instruction for medication.**

EQUIPMENT AND SUPPLIES

- Drug reference book

INSTRUCTIONS

Using information found in references, write the instructions you would give the following patients for the medication prescribed.

1. Your patient is an 83-year-old woman who has just begun taking digoxin as a treatment for congestive heart failure.

2. Your patient has just been diagnosed with diabetes. The physician has prescribed regular insulin.

Reading Comprehension
- Gain factual information

Research and Reference
- Select useful resources

Functional Reading
- Use content area vocabulary

Language
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Life Science
- Investigate health issues

Cognitive Activities
- Collect/record information
- Identify critical elements/ issues
- Create a finished product

Job Acquisition/ Development
- Practice good work habits/ attitudes

3. Your patient has epilepsy and has been on phenytoin sodium for 10 years. He has not been maintaining his prescribed dosage and was admitted for frequent seizures. During his hospital stay, the original prescribed dosage has been effective.

OBJECTIVE SHEET

ADMINISTERING MEDICATIONS

4

INTRODUCTION

As a practical nurse, you must be familiar with how medication is given and the specifics of administering each medication. You must also continuously update your skills in medication administration as new products and methods enter the market. This knowledge can decrease the risks, which are always present, of administering medication. By following correct procedure and using acceptable techniques, you will be able to administer medications safely and accurately.

PREREQUISITE

"Calculating Medication Dosages," "Documenting Medications," and "Identifying Classification and Effects of Medications."

FOCUS ASSIGNMENTS

Reading Comprehension
- Gain factual information
- Analyze cause and effect
- Draw conclusions

Language
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Composition
- Use complete sentences

FOCUS ASSIGNMENTS	
PREREADING:	Read the Handout, "The Five Rights." As you read, pay attention to what the nurses in the examples did and didn't do.
WRITING:	Write a short (two paragraphs to one page) discussion of how the incidents could have been prevented by following the five rights.

UNIT OBJECTIVE

After completing this unit, you will show the following competencies by mastering the activities on the Assignment and Job Sheets and by scoring at least 85% on the Written Test.

SPECIFIC OBJECTIVES

1. List patient assessment data to use before administering medication.

2. List the five rights of medication administration.
3. List steps to verify a medication during preparation.
4. Identify various systems of medication distribution.
5. Identify the various forms of medications.
6. Select appropriate guidelines for administering medications other than injections.
7. Label the parts of a syringe and needle.
8. Select appropriate guidelines for preparing injections.
9. Select appropriate guidelines for administering intramuscular injections.
10. Select appropriate guidelines for administering subcutaneous injections.
11. Select appropriate guidelines for administering intradermal injections.
12. Identify methods used when administering medications to a young child or infant.
13. Select appropriate guidelines for using standing orders.
14. Use standing orders. (Assignment Sheet 1)
15. Identify guidelines for reading a medicine glass.
16. Read a medicine glass. (Assignment Sheet 2)
17. Communicate appropriately during administration of medication. (Assignment Sheet 3)
18. Prepare an injection from a single or a multi-dose vial. (Job Sheet 1)
19. Prepare an injection from an ampule. (Job Sheet 2)
20. Administer sublingual medication. (Job Sheet 3)
21. Administer buccal medication. (Job Sheet 4)
22. Apply topical medication. (Job Sheet 5)
23. Administer eye medication. (Job Sheet 6)

24. Administer ear medication. (Job Sheet 7)

25. Administer nasal medication. (Job Sheet 8)

26. Administer oral medication. (Job Sheet 9)

27. Crush medication for administration. (Job Sheet 10)

28. Administer medication by nasogastric tube. (Job Sheet 11)

29. Administer a subcutaneous injection. (Job Sheet 12)

30. Administer subcutaneous insulin. (Job Sheet 13)

31. Administer subcutaneous heparin. (Job Sheet 14)

32. Administer an intramuscular injection. (Job Sheet 15)

33. Administer medication by z-track method. (Job Sheet 16)

34. Administer an intradermal injection. (Job Sheet 17)

35. Combine medications for injection. (Job Sheet 18)

36. Prepare an injection from dry medication using diluent. (Job Sheet 19)

37. Administer a rectal suppository. (Job Sheet 20)

38. Administer a vaginal suppository. (Job Sheet 21)

INFORMATION SHEET

ADMINISTERING MEDICATIONS

4

OBJECTIVE 1

Required Activities/
Resources
- discussion

Optional Activities/
Resources in
Instructor's Guide

List patient assessment data to use before administering medication.

Start with the question "How does assessment help the average patient or the patient with special needs?"

- allergies
- age
- body build
- desired effect
- diagnosis
- drug interaction
- drug tolerance
- emotional state
- indication
- medication history
- patient knowledge
- physical state
- present symptoms
- timing of dosage
- treatment goals

OBJECTIVE 2

Required Activities/
Resources
- discussion

Optional Activities/
Resources in
Instructor's Guide

List the five rights of medication administration.

Start with the questions "What methods of patient identification are the most accurate" and "How often should identification checks be performed?"

- right patient

  ☑ **NOTE:** Follow these steps to ensure giving the medication to the right patient.

  - Use the name on the chart.
  - Match the chart name with the medication card/sheet.
  - Identify the patient with the ID band.
  - Ask the patient his or her full name.

- right medication

- right dosage

- right route

  ☑ **NOTE:** Verify the route by comparing the original order, the medication card/sheet, and the form available.

- right time

OBJECTIVE 3

Required Activities/
Resources
- discussion

List steps to verify a medication during preparation.

? Start with the question "Why should you verify medications at three points?"

Check every medication three times:

- when you obtain the medication from the drawer or cabinet
- when you pour or prepare the medication
- when you return the medication to the cabinet

OBJECTIVE 4

Optional
Activities/
Resources in
Instructor's
Guide

Identify various systems of medication distribution.

- **floor stock system** — This system is most frequently found in smaller facilities. Medication is provided in larger quantities or stock medications, with the exception of dangerous or rare medications.

- **individual prescription order system** — This system provides medications for several days for an individual patient. Changes are made by prescription. The medications for the individual patient are arranged together. This system is usually used in nursing homes or for home use.

- **unit dose system** — This system uses single-unit packages of drugs, which are dispensed to fill each dosage requirement as it is ordered. The individual packages are labeled and kept in an individual patient's drawer. The drawer is usually refilled every 24 hours.

OBJECTIVE 5

Required Activities/
Resources
- discussion

Optional Activities/
Resources in
Instructor's Guide

Identify the various forms of medications.

Start with the question "What is the purpose of each form of medication?"

- oral
    - **tablet** — disk of compressed dry drug that varies in shape; may be scored for division
    - **capsule** — drug particles packaged in a gelatin container that dissolves after being swallowed
    - **enteric-coated tablet** — tablet with special coating that is resistant to breakdown in the upper GI tract
    - **time-release (sustained-release) capsule** — drug particles contained in a coated capsule that dissolves in a specified length of time
    - **lozenge (troche)** — flavored tablet for local effect on throat or mouth

      ☑ **NOTE:** Lozenges should not be swallowed.
    - **suspension** — solid particles of medication that are mixed, not dissolved, in a liquid

      ☑ **NOTE:** Drug settling occurs in suspensions; shake before use.
    - **emulsion** — liquid medication that contains oils and fats in water
    - **elixir (fluid extract)** — liquid medication with an alcohol base
    - **syrup** — liquid medication that is sweetened and flavored
    - **solution** — clear liquid medication in which the drug is evenly dissolved

- rectal
    - **suppository** — drug suspended in a substance that melts at body temperature
    - **enema solution** — drug suspended in solution to be given as an enema
- topical
    - **transdermal** — medicated "patch" applied to the skin; medication is absorbed over a period of time
    - **ointment** — semi-solid preparation of drug for external application
    - **liniment** — external application that acts as counterirritant
    - **lotion** — liquid preparation of drug for external application
- mucosal
    - **eye, ear, and nose drops** — liquid medication for administration into specified area
    - **eye ointment** — sterile semi-solid preparation for ophthalmic use only
    - **vaginal cream** — medicated cream to be applied to the vagina with use of a special applicator
    - **vaginal suppository** — drug suspended in substance that melts at body temperature for local effect on vagina
    - **douche solution** — sterile solution used to irrigate vaginal canal
    - **buccal tablet** — tablet to be placed between the cheek and the gum
    - **sublingual tablet** — tablet to be placed under the tongue
- inhalant
    - **spray or mist** — liquid drug form to be inhaled as fine droplets from spray bottle or nebulizer
    - **gas** — anesthetic to be inhaled for general anesthesia

- **powder** — powder form of drug administered through an inhaler

- injectable
    - **ampule** — small glass container that holds a single dose of sterile solution for injection
    - **vial** — drug is packaged in a glass single- or multi-dose container that is sealed with a rubber stopper
    - **cartridge injectable** — single dose of drug in a glass container that fits into a particular syringe
    - **aqueous solution** — solution with a sterile water base
    - **viscous solution** — solution with an oil base

OBJECTIVE 6

Select appropriate guidelines for administering medications other than injections.

WORDS YOU SHOULD KNOW	
O.D.	abbreviation for *oculus dexter* (right eye), used to indicate eye medication to be administered to the right eye
O.S.	abbreviation for *oculus sinister* (left eye), used to indicate eye medication to be administered to the left eye
O.U.	abbreviation for *oculus uterque* (both eyes), used to indicate eye medication to be administered to both eyes

- oral medication
    - Do not touch oral medication.
    - Do not open unit dose oral medication until the patient is ready to take it.
    - When solid medication is kept in stock containers, first pour the number desired into the container's cap, then transfer them to the medicine cup.

- ▫ When administering liquid medication, remove the cap and place it upside down on the medicine cart. Hold the medicine cup at eye level. Turn the label away from you as you pour the medication into the medicine cup — this prevents the medication from dripping down the label and making it illegible.

- ▫ Use the medicine cup to pour the medication into the patient's mouth or let patients use their own fingers to take medications.

- ▫ You may have to crush medications for patients who are unable to take solid forms of oral medication.

    - ▸ Use references and check with the pharmacy to see if the medication can be crushed or is available in liquid form. If liquid is available, have the physician approve its use before ordering it. Do not crush enteric-coated tablets or timed-release capsules.

    - ▸ You must also determine what substances a crushed medication can be combined with for safe administration. Common substances for this use include ice cream, sherbet, applesauce, water, and juice.

- medication through nasogastric tube

☑ **NOTE:** You may need to administer medication through a nasogastric tube for patients who are unable to swallow, are comatose, or have a disorder of the esophagus. If the prescribed medication is not in liquid form, you may have to crush tablet medication and add it to a liquid, or, in the case of capsule medication, separate the capsules and dissolve the powder in water. Avoid using medication that cannot be safely crushed when administering medication through the nasogastric tube.

- ▫ As with administration of any liquid into a nasogastric tube, **check the placement of the tube prior to administering the medication.** The N/G tube should be clamped, enabling you to attach a large syringe with a catheter tip.

- ▫ Use water (approximately 30 cc) to clear the tube, and check for patency by unclamping the tube once the water is in the syringe.

- ▫ You may need to reposition the patient if the tube is against the wall of the stomach.

    - Add the medication to the syringe.
    - Do not allow air to flow into the N/G tube. Clamp the tube as soon as the liquid has entered the patient.
    - Flush the tube with water.
    - Immediately reattach continuous feeding. However, **do not reattach suction for 30 minutes.**

- sublingual or buccal medications
    - Instruct the patient not to chew or swallow the medication or touch it with the tongue.
    - Do not allow the patient to have any food or drink until the medication is completely dissolved.
    - Instruct the patient not to smoke until the medication is dissolved.

- topical medications
    - Wear gloves to apply skin medications. If you experience irritation or itching while wearing gloves, use snug-fitting gloves, which will cause less discomfort.
    - Unless otherwise specified, remove old topical medications before applying new medication.
    - Medicated lotions should be patted, not rubbed, onto the affected area.
    - Do not use gauze to cover the medicated area; it may cause additional irritation.
    - When applying medications to burns, use sterile technique (with sterile gloves) to apply the medication. Burns are painful — use a gentle, light touch.
    - Follow the physician's order to cover the area or leave it open to the air. If you are uncertain of the physician's intention, ask the charge nurse first. Call the physician if needed.

- eye medications
    - Eye medications should be labeled "for ophthalmic use." Read the label carefully — eye medications and ear medications look similar and can be easily confused. The label should also indicate O.D., O.S., or O.U.
    - Each patient must have their own bottle or tube of eye medication.
    - Administer medications at room temperature.
    - Explain the procedure to the patient and gain the patient's cooperation during administration to decrease the potential for trauma.
- ear medications
    - Before administering an ear medication, make sure the ear canal is not blocked. If there is excessive wax, obtain an order for irrigation (unless the medication being given dissolves wax.)
    - Always administer ear medications at room temperature.
    - Position the patient with the affected ear upward and pull the earlobe to straighten the outer canal. In children under 3 years old, pull the earlobe down and back. In older children and adults, pull the earlobe up and back.
    - Instill the prescribed number of drops without touching any part of the ear with the dropper. The patient should remain positioned with the affected ear up for a few minutes. Insert cotton plugs if ordered.
- nasal medications
    - Have the patient gently blow his or her nose before administering the medication.
    - For nose drops, position the patient with the head tilted back. The patient should remain in this position for 2-3 minutes after the drops are instilled.
    - Administer sprays with the patient's head held upright and one nostril blocked. Shake the spray before use and hold the bottle upright while spraying. The patient must inhale through the open nostril at the same time the puff is given.

  - After the medication is administered, instruct the patient to avoid blowing his or her nose.

- rectal suppository
  - To avoid holding the suppository, which will cause it to melt, place the package in a medicine cup. Do not open the suppository until you are in the patient's room.
  - Check the patient's understanding of the purpose of the suppository.
  - Lubricate the suppository before inserting it into the rectum. A water-based lubricant is generally recommended. Use only enough lubricant to ease insertion — do not completely cover the suppository in lubricant.
  - The rounded end is inserted first. Insert the suppository about 1 inch past the internal rectal sphincter.
  - After administration, instruct the patient to remain in position for approximately 20 minutes. Children may need assistance holding the suppository in — this can be accomplished by pressing the buttocks together.

- vaginal medication
  - Have the patient empty her bladder before administering the medication.
  - Position the patient in the lithotomy position.
  - After administering the medication, have the patient remain in this position for 10 minutes with a perineal pad underneath her for any drainage.
  - Maintain the patient's privacy and dignity during the procedure.

OBJECTIVE 7

Required Activities/
Resources - TM 1
- sample syringes

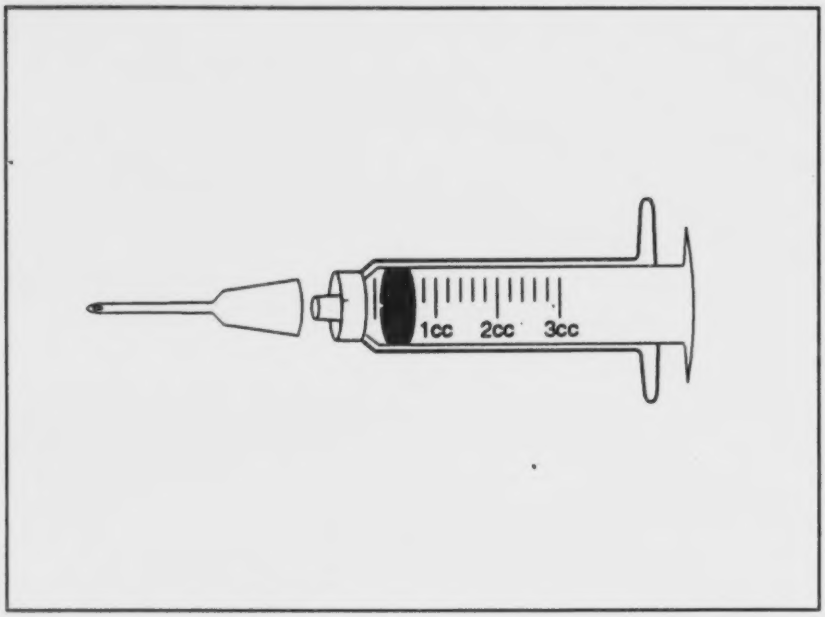
Optional Activities/
Resources in
Instructor's Guide

Label the parts of a syringe and needle.

Your instructor will show a transparency with the parts of a syringe and needle labeled.

Your instructor will show you examples of different types of syringes and needles.

FIGURE 1



OBJECTIVE 8

Required Activities/ Resources - syringes and needles - discussion

Optional Activities/ Resources in Instructor's Guide

Select appropriate guidelines for preparing injections.

- Your instructor will show you different sizes of needles and syringes
- Start with the question "What safety precautions should I use with cartridge systems?"

WORDS YOU SHOULD KNOW	
diluent	a liquid, usually sterile water or saline solution, mixed with dry medications for injection

- selecting the needle
  - ☐ The length of the needle used is determined by
    - route used
    - patient
    - type of injection
    - medication being given

  - The gauge of the needle used is determined by
    - route of injection
    - medication used

      EXAMPLE: Use larger gauges of needles for heavy antibiotics to prevent needle blockage.
    - type of injection
- selecting the syringe
  - All syringes for injection (other than intravenous) should be 3 cc or less. The 1 cc and the 3 cc syringe are the most common sizes for injection.
  - To choose the appropriate syringe for an adult, you should consider the amount of medication being given. If the amount to be given is less than 1 cc, accuracy can be increased by using a 1 cc syringe.
  - cartridge syringes
    - Insure that the medication cartridge is securely held in the syringe.
    - Insert the cartridge so that the name of the medication and the calibrations can be read easily.
- ampules
  - Before attempting to break the neck, gently tap the ampule to move the medication in the lower part of the ampule.
  - To protect yourself from glass slivers, hold a gauze sponge around the neck of the ampule as you break it.
  - To keep glass slivers out of the medication, use a filter needle when withdrawing the medication
  - As with drawing any injection, keep the needle within the fluid during drawing.
  - After the medication has been removed from the ampule, discard the ampule in a puncture resistant container.
  - Clear the filter needle of medication by pulling the plunger back, then replace the filter needle with a needle of appropriate length and gauge.

  - Push the plunger forward slowly until a drop of medication appears at the end of the needle and the correct dosage is achieved.

- vials

  - Always check the date on the vial.

  - Most vials, when unused, have a metal band around the top with a protective covering over the rubber portion. This protective covering must be removed before a needle can be inserted into the vial.

  - Clean the rubber stopper with alcohol, using a single rotation of the alcohol swab. Allow the alcohol to dry before inserting the needle.

  - Handle only the barrel, the flange of the plunger, and the needle cap during preparation of the injection.

  - Push the plunger up within the barrel to assure that the barrel is free of obstructions near the end.

  - If a multi-dose vial is being used, avoid previous puncture sites.

  - Keep the level of the lumen of the needle within the air space and inject the air in the vial.

  - Keep the label toward you and the calibrations on the syringe visible as you withdraw the medication.

  - If air is drawn into the syringe, use one of these methods to remove it.

    - Flick the syringe to move the air to the top of the barrel. Then push the plunger to inject the air back into the vial. Use caution when flicking small gauge needles; they bend very easily.

    - Slowly inject the contents of the barrel back into the vial until the air is removed and begin withdrawing medication again.

  - Do not remove the needle from the vial for any reason until the dosage is correct. The dosage read on the calibration of the syringe should be exactly the same as the desired dosage. When this is correct, remove the needle from the vial and carefully place the cap on the needle.

☞ **NOTE:** *Never* cap a needle after it has been used on a patient. A puncture-resistant container should be kept in each patient's room for disposal of used needles.

- dry medications

  ☞ **NOTE:** Some medications do not store well in mixed form and are packaged in dry form, which must be mixed with a diluent to be used as a solution. Do not prepare dry form medication until it is needed for use. Consult a pharmacist if a delay occurs between the preparation and use of dry form medications. Most diluents come in multi-dose vials and should be drawn according to the multi-dose vial procedure. The medication label will specify the type and amount of diluent to use.

  ☐ Tap the vial of dry medication to break up the powder if it has caked.

  ☐ Label any remaining medication according to facility policy.

- combining medications

  ☞ **NOTE:** Medication orders are frequently written for an injection that combines two medications. Not all injectable medications can be combined. Consult references or the pharmacist to determine if medications are compatible.

  ☐ Before drawing two medications, determine the total amount that will be in the syringe when the procedure is completed. To determine the total amount, add the first medication amount to the second medication amount.

  ☐ The order of withdrawing and combining the medication depends on the medications to be combined and the packaging of each medication. If possible, you should draw from the single dose container last, which would cause less waste if an error occurred.

  ☐ Be extremely careful if both medications are from multi-dose vials. None of the first medication drawn can be allowed into the multi-dose vial of the second — the second medication must be drawn perfectly on the first attempt. The same principle applies if a single-dose vial or an ampule is used for the second medication and the dosage does not require the complete contents of the container.

- Once the needle is placed into the vial of the second medication, maintain a slight traction on the plunger. This traction will keep the potential vacuum in the vial from pulling the first medication in.
- When you removing the needle from the second vial, the release of the vacuum may a small amount of spray. Be sure to shield your eyes during this process.
- For some diabetic patients it is necessary to give two insulins which act at different times. The most common combination is regular and NPH insulin. When drawing these two insulins together, draw the shorter acting insulin (regular) first, then the longer acting (NPH). This is done because the longer-acting insulin can absorb shorter-acting insulin, but the shorter-acting cannot absorb the longer-acting form. If other insulins are to be combined, consult the pharmacist to determine their compatibility.

OBJECTIVE 9

Select appropriate guidelines for administering intramuscular injections.

Required Activities/
Resources
- discussion

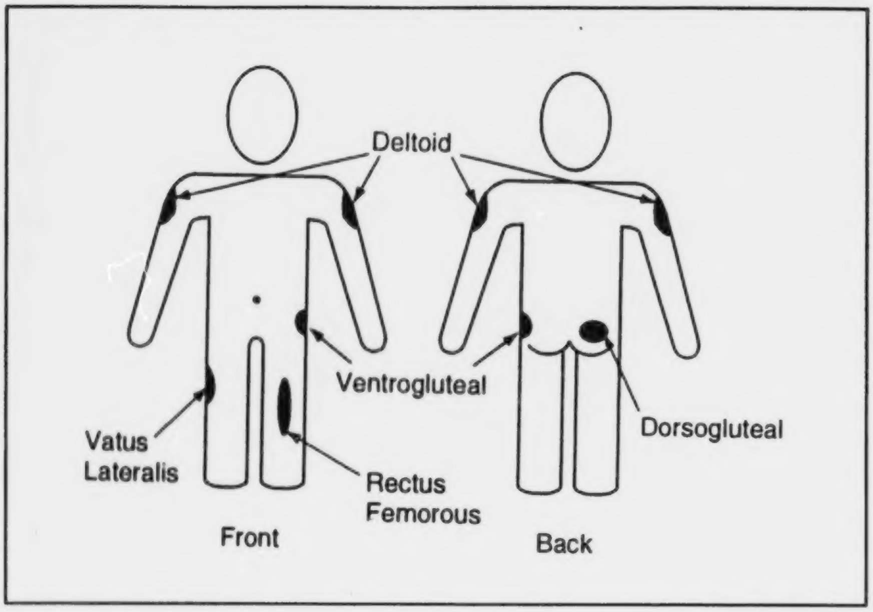
Optional Activities/
Resources in
Instructor's Guide

Start with the question "How can I reduce patient discomfort?"

WORDS YOU SHOULD KNOW	
gauge	the diameter of the lumen of a needle (the smaller the lumen, the larger the number of the gauge)

- injection sites (Figure 2)

FIGURE 2


Deltoid
Ventrogluteal
Dorsogluteal
Vatus Lateralis
Rectus Femorous
Front
Back

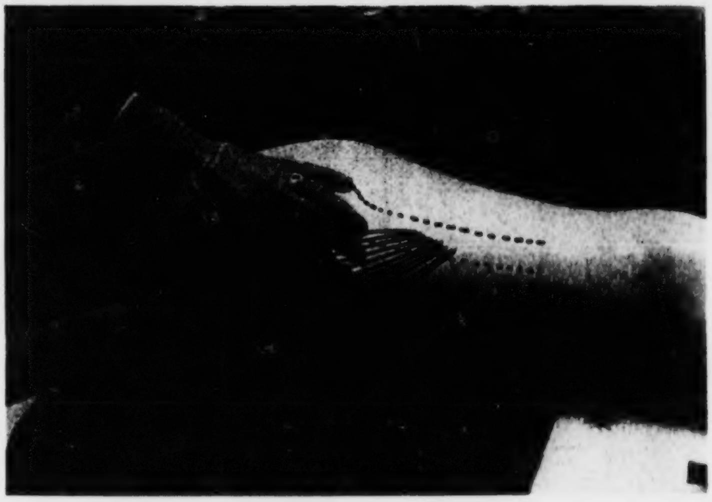
☐ **deltoid** — located three finger breadths below the acromion process. (Figure 3)

FIGURE 3

☑ **NOTE:** This area has the smallest capacity in the adult — medications must be less than 2 cc and non-irritating.

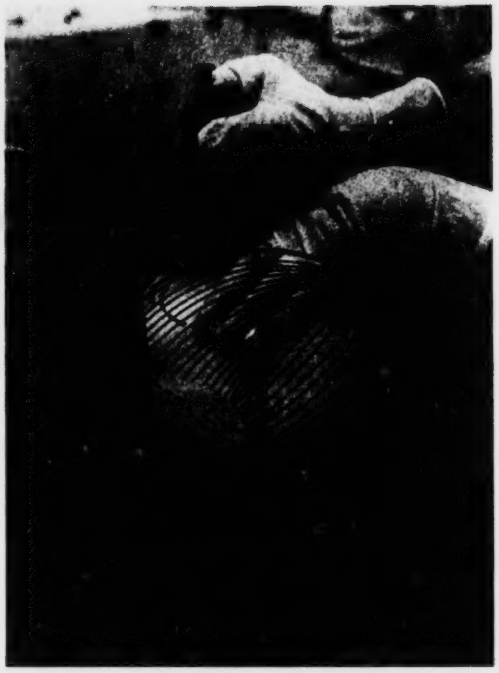
- ☐ **vastus lateralis** — located on the anterior lateral thigh between one handbreadth below trochanter and one handbreadth above the knee (site of choice in infants) (Figure 4)

FIGURE 4



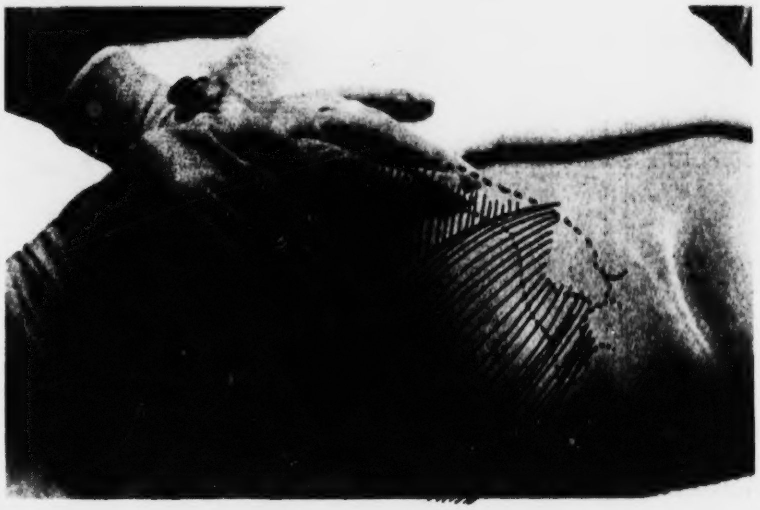
- ☐ **rectus femoris** — located medially to the vastus lateralis (use the same method as locating the vastus lateralis, but more toward the midline without crossing the midline)
- ☐ **ventrogluteal** — uses gluteus medius muscle; form a "V" with your fingers: palm on lateral trochanter, index finger on anterior superior iliac spine and middle finger extended to iliac crest (not for children under 3) (Figure 5)

FIGURE 5



- ☐ **dorsogluteal** — upper outer quadrant of gluteal area; above and outside a line from greater trochanter to posterior iliac spine (not for children under 3) (Figure 6)

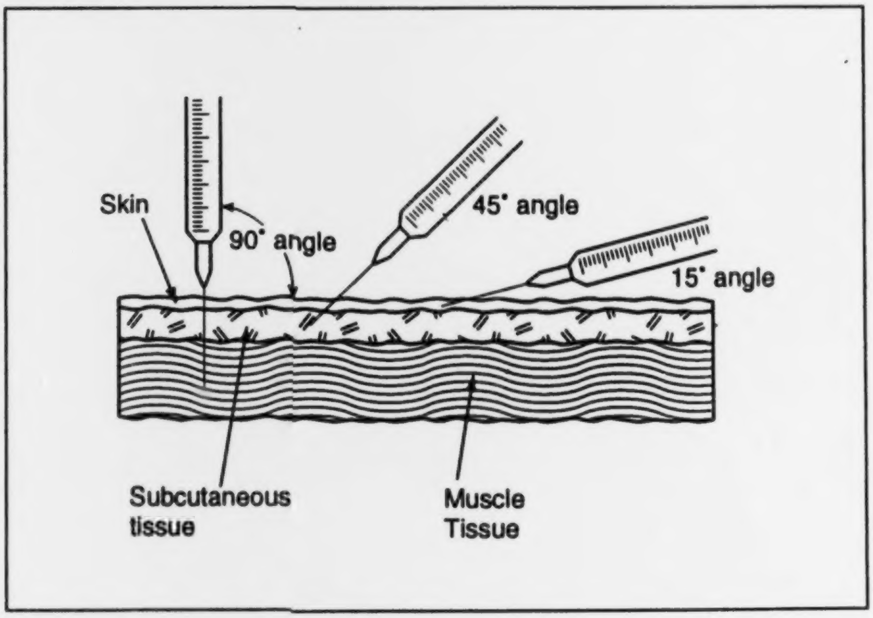
FIGURE 6



- ☐ Assessment data to analyze in choosing a site for injection:
    - ▸ rate of absorption
    - ▸ volume of the medication to be injected (larger volumes require larger muscle mass)
    - ▸ viscosity of the drug (oil-based or thick medications should be administered in large muscle mass)
    - ▸ size and body weight of the patient

- Intramuscular needles vary greatly in length depending on the patient and the location of the injection, but are generally ½" to 2". Children are most likely to need the shortest length.
    - ☐ Use a gauge from 21-25 depending on the viscosity of the injection.
    - ☐ The maximum amount that should be given in one site intramuscularly is 3 cc.
    - ☐ Give the injection at a 90° angle to the plane of the site. (Figure 7)

FIGURE 7



- ☐ Aspirate or pull back on the plunger slightly to check for blood. Only small air bubbles should appear. If blood appears, stop the injection and discard the medication.

- ☐ Use light massage, as well as patient activity, to help increase the absorption of the medication.

- Z-track method

The z-track method is an alternate method for injection of intramuscular medication. Skin and tissue are pulled to one side (Figure 8) before giving the injection (Figure 9).

FIGURE 8

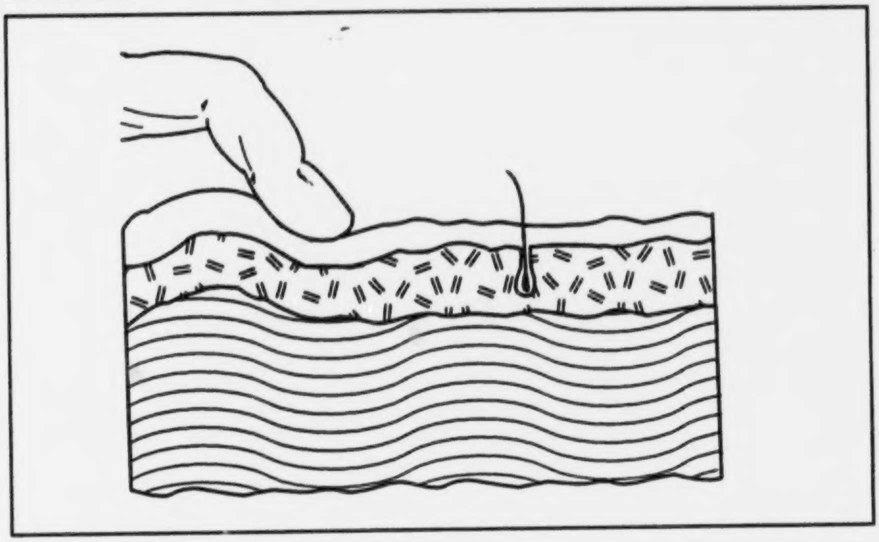
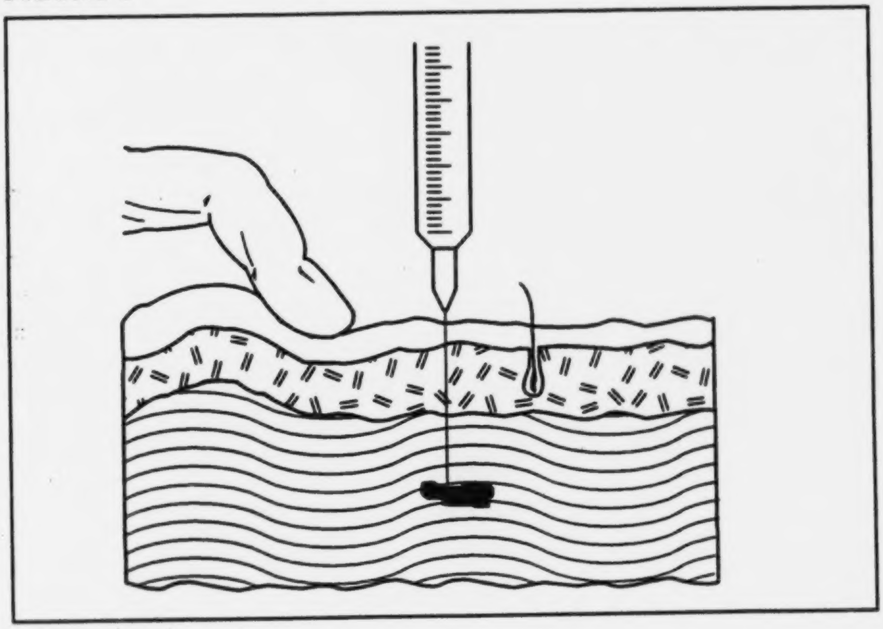
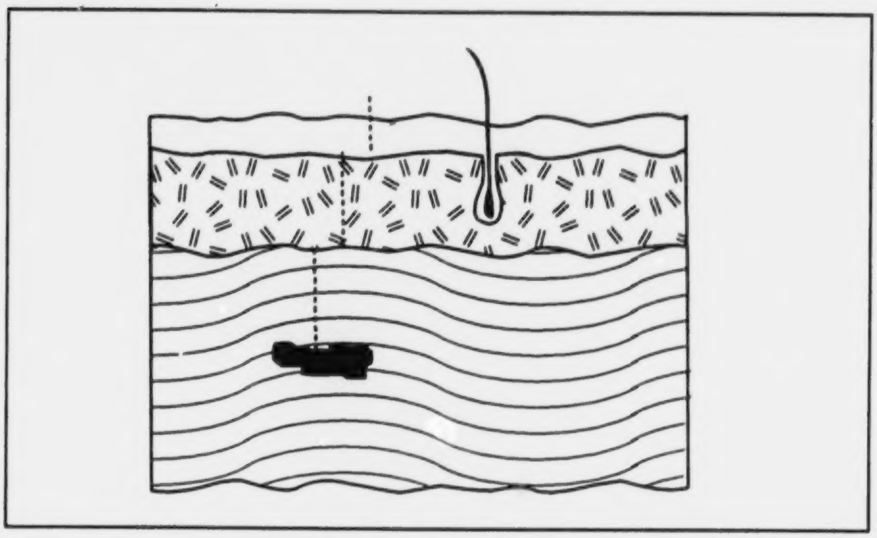


FIGURE 9



This allows the skin to move over the injection site, creating a seal. (Figure 10) Use this method with medications that are irritating or stain the skin. The z-track method is also useful for patients with severe edema or skin that does not seal well around injection sites.

FIGURE 10



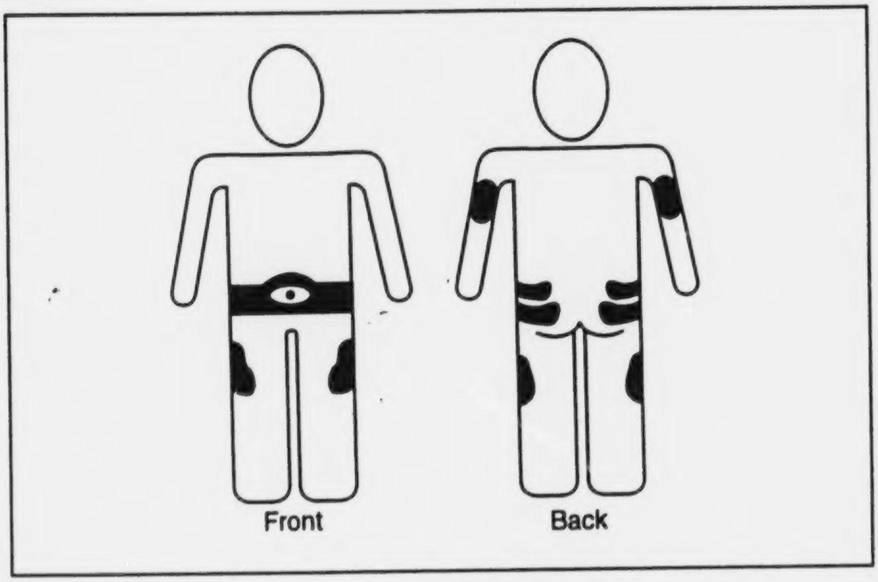
OBJECTIVE 10

Select appropriate guidelines for administering subcutaneous injections.

- Injection sites

  The sites of subcutaneous injections vary, but the most common sites are the abdomen, thighs, and upper arm. (Figure 11)

FIGURE 11



- Do not give more than 2cc in one site.

- Intradermal and subcutaneous injections generally require needles from 3/8" to 5/8" in length.

- The needle gauge ranges from 25 - 27.

- Give the injection at a 45° angle. (Figure 7, objective 9)

- Aspirate to check for blood. If you draw blood, remove the needle immediately and prepare the injection again.

- Two medications that are administered subcutaneously and require special procedures are insulin and heparin. These precautions should be used in addition to the routine precautions of administering any subcutaneous medication.

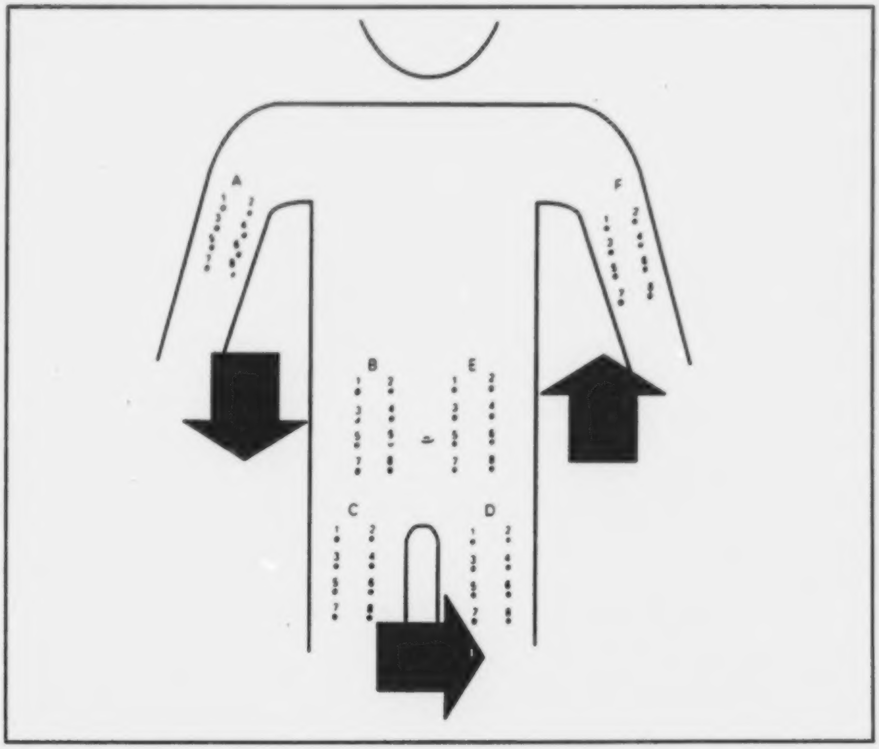
  ☐ insulin

  ☑ **NOTE:** Insulin varies in strength. U-100 (100 units of insulin per cc) is the most commonly used. U-40 (40 units of insulin per cc) is used by patients with visual disorders who give their own insulin. The barrel and calibrations of the syringe are magnified, making it easier to read. U-500 (500 units of insulin per cc) is used very rarely and only in extreme cases.

  ▸ Check the patient's most recent blood sugar according to your facility's policy.

- When using each type of insulin, use the syringe designed for that particular type of insulin. For example, U-100 syringes should only be used with U-100 insulin.
- To mix the medication, roll it gently between your palms. Do not shake the bottle; this destroys the insulin molecules and allows bubbles in the solution.
- Insulin has a shorter shelf life than most medications. Check the date before administration.
- You should be familiar enough with the particular insulin to recognize a change in appearance of the medication.
- Do not massage the injection site.
- Rotate injection sites to prevent destruction of subcutaneous fat in frequently-injected areas. Document injection sites used for hospitalized diabetic patients. Provide patient instruction for home use of a rotation schedule. (Figure 12)

FIGURE 12



- heparin

  ☑ **NOTE:** Subcutaneous heparin is used frequently for anticoagulant therapy. Heparin not only works systemically, but it may also have some localized anticoagulant side effects.

  - The site of choice for the injection is the fat pads of the iliac crest.

    ☑ **NOTE:** It may be necessary to use the other subcutaneous sites. Special care should be given to avoid areas which are being exposed to pressure or have insufficient tissue depth for the 90° injection.

  - Use a 1 cc tuberculin syringe to accurately measure the medication.
  - Use a ½" needle with a gauge of 26-27.
  - Unlike other subcutaneous injections, use a 90° angle.
  - Do not inject into a hematoma.
  - Gentle pressure following the injection controls local bleeding.
  - Use a rotation schedule to administer heparin.
  - Some facilities use ice packs before or after administration. Follow your facility's policy.
  - Do not perform aspiration before administering heparin. Aspiration increases local tissue damage and the likelihood of hematoma formation.

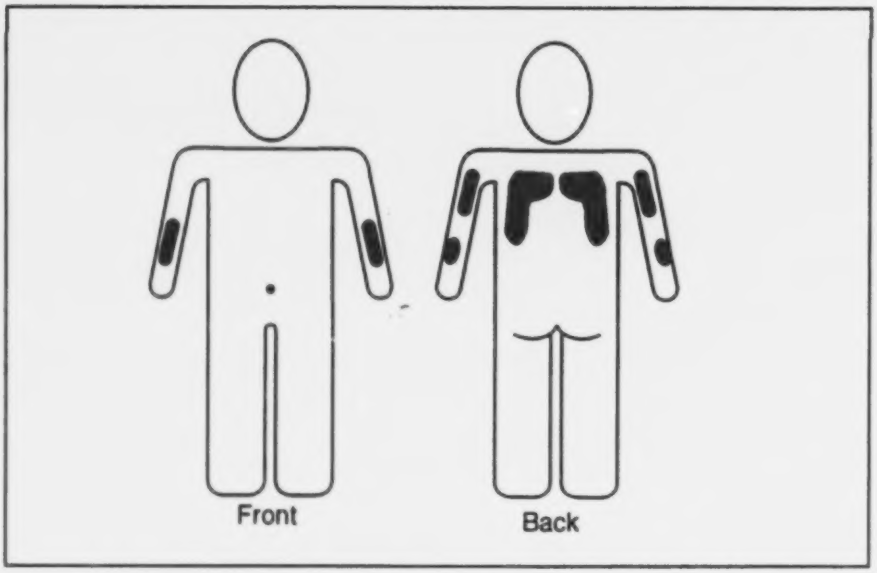
OBJECTIVE 11

Select appropriate guidelines for administering intradermal injections.

- Injection sites (Figure 13)

  ☑ **NOTE:** Intradermal medications are usually given to test for sensitivity. Allergy testing and tuberculin testing are the most common. The sites are chosen according to the purpose of testing.

FIGURE 13



- Mark the exact location of the test so that readings will be accurate.
- The angle of injection should be 15°. (Figure 7, objective 9)

OBJECTIVE 12

Required Activities/
Resources
- discussion
- restraint devices/methods

Optional Activities/ Resources in Instructor's Guide

Identify methods used when administering medications to a young child or infant.

Start with the question "How does the developmental level of the child affect the methods used to administer medication?"

Your instructor will demonstrate restraint methods and/or devices

- oral medications
    - ☐ Do not use a medicine glass to give an infant medications. Some infants may prefer to suck the medication from a regular nipple as though they were feeding, or you may use a medicine dropper.
    - ☐ Elevate the infant's head, and give only a few drops at a time, making sure it is swallowed. If infant spits the medication, report this to the head nurse.
    - ☐ **Do not** leave infants on their backs after giving oral medications.
    - ☐ Never hold an infant's nose to force swallowing.

  - If the patient is a small child who is cup feeding, help the child maintain control over the cup to avoid spilling the medication
  - All tablets must be crushed. They may be sweetened with syrup diluted with water. Do not dilute the medication with too much of any substance; the child may not be able to swallow the entire amount.
  - Check the child's mouth to verify the medication has been swallowed.
  - Report spitting or vomiting. Older children can usually manage pills and capsules fairly well; however, always ask if they have trouble with gagging or choking on tablets prior to giving them one to swallow.
  - Do not attempt to measure small dosages (½ teaspoon or less) in a teaspoon or in a dram glass. These measurements may be dangerously inadequate. Measure this amount in a 3 cc syringe. Use the syringe, without a needle, as a dropper to drop the medication into the child's mouth.

- injected medications
  - When giving children dosages ordered in minims or less than 1 cc, use a tuberculin syringe. Because of the small markings on the 3 cc syringe, you may give an inaccurate dose of medication.
  - Treat your patient as a respected individual. Praise or hold the child after receiving an injection. In some situations, such as when giving injections in hospitals, you may not want parents to be present during injection. Assess the role/relationship of the family before sending parents out.
  - Because a child's muscle layers are not as thick as an adult's, use shorter needles or inject needles less deeply. When possible, use needles with smaller lumens to prevent undue pain.
  - You may need help to prevent sudden movement. Never attempt an injection on a child without adequate help. Explain to children that you are helping them "hold still." Restraints (cloth) are generally not necessary if the proper techniques are used and adequate assistance is available.
  - Administer the medication as quickly as safety permits so that the child's anticipation is kept to a minimum.

  - Intramuscular injections for infants and young children should be given in the vastus lateralis because it is the largest muscle.

- nose drops
  - Nose drops are generally disliked by children; you may need help when administering them.
  - If the child's nose is congested, suction it before inserting the drops.
  - Lie the child down with the head tilted backwards.
  - Administer the drops with the dropper pointed slightly upward.
  - Keep the child in the horizontal position for a few minutes to allow the drops to work. Some children will cooperate by sniffing if asked.
  - Do not use oily nose drops; aspiration is possible.
- ear drops
  - Administer ear drops at room temperature. Cold ear drops can cause pain, nausea, and vomiting.
  - Pull the child's ear down and back to straighten the external auditory canal.
  - Do not use cotton ear plugs unless specifically ordered.
- eye drops
  - Always ask for assistance before attempting to give eye drops to an anxious child. The child may move suddenly, causing you to damage the cornea with the dropper.
  - Instill the eyedrops in the lower conjunctival sac, not on the eyeball.
  - Ask children to look up while instilling the drops.
  - Many infants squeeze their eyelids tightly shut. Use sterile cotton balls to hold the eyelids open.

- topical medications
    - ☐ Small children may ingest topical medications. You may need to cover the area where the medication has been applied, restrain the part of the body containing the medication, or make sure the medication is not harmful if eaten.

OBJECTIVE 13

Required Activities/
Resources
- discussion

Select appropriate guidelines for using standing orders.

Start with the question "How do I document a standing order?"

WORDS YOU SHOULD KNOW	
standing order	a medication order that applies to many or all of a particular physician's patients

☑ **NOTE:** Physicians develop standing orders to meet the needs of patients with certain conditions (such as mild pain or constipation).

- Evaluate the patient's condition and determine if a medication listed in a standing order is appropriate. Do **not** administer medication simply because the patient meets the criteria. Consider all information before administering a standing order. If you are unsure about whether or not to give a patient a standing order medication, check with your charge nurse.
- Check standing orders for completeness.
- If the standing order has an expiration date, medications must be reordered or discontinued after that date.
- The physician must co-sign orders within 24 hours.
- Document the reason you gave the medication (give the patient's symptoms).

OBJECTIVE 14

Complete Assignment Sheet 1

OBJECTIVE 15

Required Activities/
Resources
- demonstration

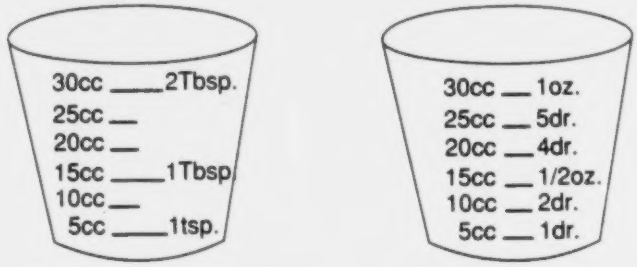
Identify guidelines for reading a medicine glass.

Your instructor will show you examples of the meniscus of different medications

WORDS YOU SHOULD KNOW	
meniscus	the curved surface of fluid in a container; may be positive (convex) or negative (concave)

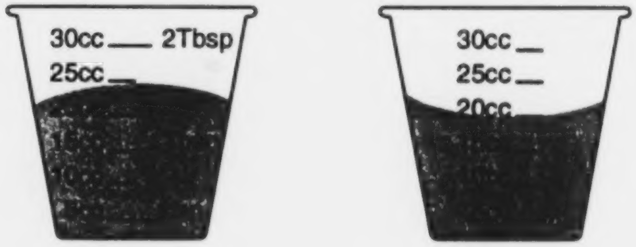
☑ **NOTE:** Most medicine glasses are labeled using all three systems of measurement: apothecary, household, and metric. (Figure 14)

FIGURE 14


30cc 2Tbsp.
25cc
20cc
15cc 1Tbsp
10cc
5cc 1tsp.
30cc 1oz.
25cc 5dr.
20cc 4dr.
15cc 1/2oz.
10cc 2dr.
5cc 1dr.

- To read a medicine glass correctly, hold the glass at eye level.
- Read the *bottom* of the meniscus. Regardless of whether the meniscus is positive (bulges in the center) or negative (dips in the center), use the *lowest point* for determining the amount in the glass. (Figure 15)

FIGURE 15


30cc 2Tbsp
25cc
30cc
25cc
20cc

ASSIGNMENT SHEET 1

ADMINISTERING MEDICATIONS

4

Name ______________________________ Score __________

OBJECTIVE 14 **Use standing orders.**

INSTRUCTIONS

Read the following case studies and determine which of the standing orders should be implemented. If the standing order should not be implemented, explain why and determine the correct action to take.

Functional Reading
- Use content area vocabulary
- Interpret abbreviations/ acronyms

Language
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Life Science
- Investigate/apply principles of anatomy and physiology

Case Study 1

Your patient is a 72-year-old woman who was admitted two days ago for abdominal pain of unknown origin. She is complaining of pain in her lower abdomen. She also says she has not had a bowel movement in four days and is requesting a laxative. Her physician has the following standing orders:

Tylenol 10 mg po q6h prn mild pain or fever
MOM 30 cc qd prn constipation
Demerol 50 mg q4h prn severe pain

What would you do?

____

____

____

____

Case Study 2

It is 2:00 am. Your patient is in traction with a fractured femur. He says he has an intermittent painful pulling feeling in his leg that keeps him awake. You have performed a neurovascular check; it was normal. His traction is aligned and functioning correctly. His physician has the following standing orders for orthopedic patients:

Ascriptin 10 mg po q6h prn mild pain or fever
Tylenol #3 ii tabs q4h prn severe pain
Dalmane 30 mg po HS prn sleep
Valium 5 mg po tid muscle spasms

Cognitive Activities
- Collect/record information
- Identify critical elements/issues
- Analyze/synthesize information
- Draw conclusions
- Identify/develop alternatives
- Evaluate alternatives
- Select an alternative

Job Acquisition/ Development
- Practice good work habits/attitudes

What would you do?

Case Study 3
Your patient was admitted for thrombophlebitis and is receiving a heparin IV in her right arm. She is complaining of pain in her legs. She has no pain medication ordered, but her physician has the following standing orders:

Demerol 50 mg IM q6h for severe pain
Aspirin ii tabs q4h prn mild pain

What would you do?

ASSIGNMENT SHEET 2

ADMINISTERING MEDICATIONS

4

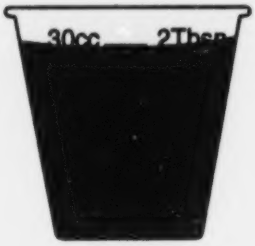
Name ______________________________ Score __________

OBJECTIVE 16 **Read a medicine glass.**

INSTRUCTIONS State the amount contained in each medicine glass in the system(s) given.

Math Application
- Solve word problems
- Use English and metric measures

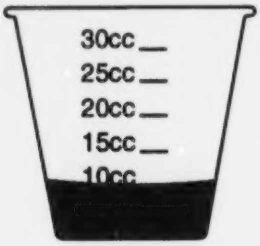
1.



A. metric_______

B. household_______

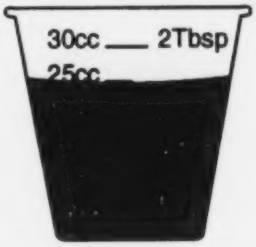
2.


30cc
25cc
20cc
15cc
10cc

A. metric _______

B. household_______

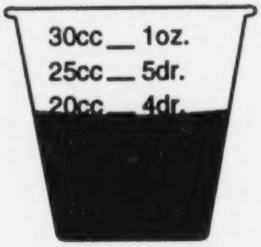
3.


30cc — 2Tbsp
25cc

A. metric_______

B. household_______

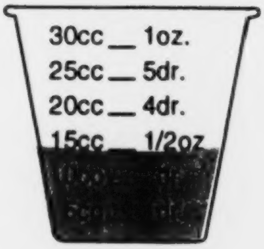
4.


30cc — 1oz.
25cc — 5dr.
20cc — 4dr.

A. metric_______

B. apothecary_______

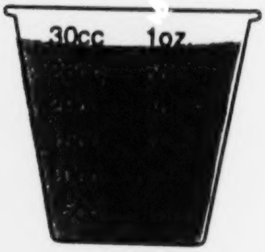
5.


30cc — 1oz.
25cc — 5dr.
20cc — 4dr.
15cc — 1/2oz

A. metric_______

B. apothecary_______

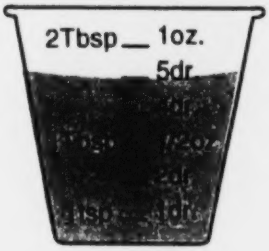
6.



A. metric_______

B. apothecary_______

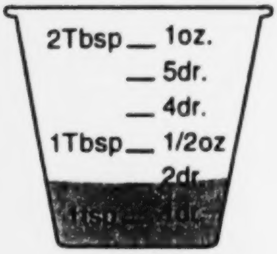
7


2Tbsp — 1oz.
5dr.

A. apothecary_______

B. household______

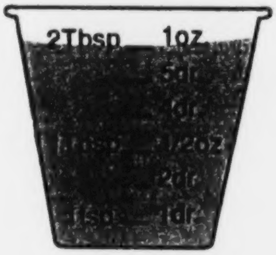
8.


2Tbsp — 1oz.
— 5dr.
— 4dr.
1Tbsp — 1/2oz
2dr.

A. apothecary_______

B. household_______

9.



A. apothecary_______

B. household_______

ASSIGNMENT SHEET 3

ADMINISTERING MEDICATIONS

4

Name ____________________ Score __________

OBJECTIVE 17

Communicate appropriately during administration of medication.

INTRODUCTION

Good communication is a vital part of nursing, especially when administering medications. A nurse with good communication skills can overcome the patient's stress. Focus on the medications and the patient's understanding of them. Use this time to assess the patient's knowledge and response to medication and provide patient teaching about medication.

INSTRUCTIONS

After each situation listed below, write the statement or questions that would best meet the needs of the patient and situation.

1. Your patient is new on the unit and has a diagnosis of abdominal pain. She arrived at 3:00 a.m. and has orders for NPH insulin 28 units this a.m. Her medication history has not been completed. What is the first thing you should discuss with this patient before you give the injection?

____

____

____

____

2. Your patient is scheduled for exploratory surgery tomorrow. The doctor has ordered a clear liquid diet and electrolyte solution 1 gallon this p.m. The patient has cooperated on the first two glasses, but then asks, "Why do I have to have so much of this stuff?" What would you say in response?

____

____

____

____

Language
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Life Science
- Investigate health issues

Cognitive Activities
- Collect/record information
- Identify critical elements/issues
- Create a finished product
- Transfer knowledge/training to new situations

3. A patient has been discharged on the antibiotic that she has been receiving for three days. She asks you, "I don't need to take these at home, do I?" What would your response be?

____

____

____

____

4. Your patient has been in the hospital several times for angina. She is on furosemide and digoxin. When you take her medication to her she tells you, "Those two little white pills sure are good. Those are my water pill and my heart pill." What response could increase your knowledge of this patient's understanding of her medication?

____

____

____

____

JOB
SHEET 1

ADMINISTERING MEDICATIONS

4

Name ______________________________

OBJECTIVE 18 **Prepare an injection from a single or multi-dose vial.**

EQUIPMENT AND SUPPLIES

- Syringe with attached needle
- Vial
- Medication order
- Medication card/sheet
- Alcohol swabs
- Medication tray
- Medication cart

PROCEDURE

Research and Reference
- Select useful resources

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary
- Interpret abbreviations/ acronyms

Language
- Use standard grammar, spelling, and capitalization

Functional Writing
- Complete forms and records

	Yes	No
Assessment and Analysis		
1. Verify the medication order. a. Read the physician's order. b. Read the medication card/sheet.	_____	_____
2. Review the literature specific to the medication.	_____	_____
3. Determine the correct dosage.	_____	_____
4. Determine the size of syringe needed.	_____	_____
Planning		
5. Wash your hands.	_____	_____
6. Select and organize the equipment.	_____	_____
7. Keep the medication card or sheet in position for easy reading.	_____	_____
8. Obtain the medication vial.	_____	_____
Implementation		
9. Compare the name of medication with the medication card/sheet.	_____	_____

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals
- Convert units of measure

Math Application
- Select/apply mathematical formulae
- Use English and metric measures
- Solve ratio/proportion problems

Functional Math
- Make measurements

General Science
- Use scientific instruments

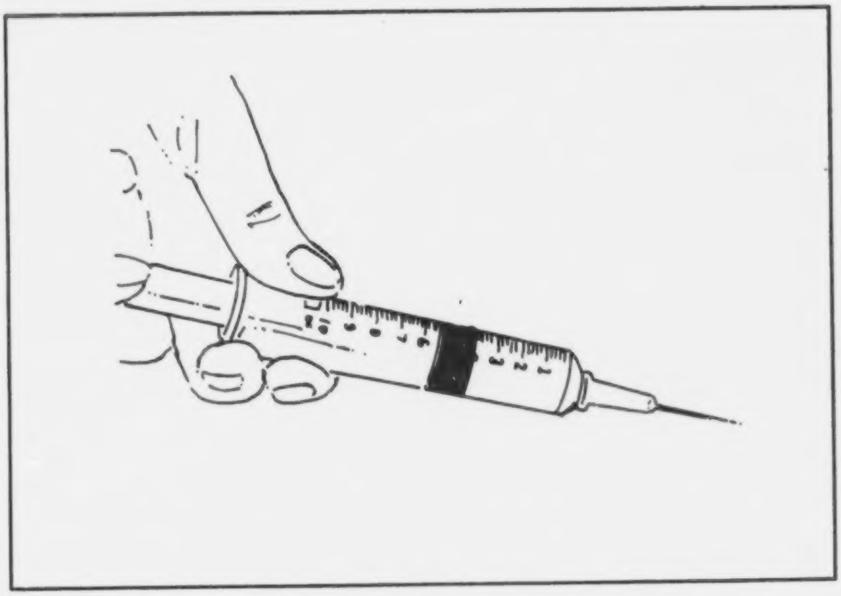
Life Science
- Investigate health issues

Cognitive Activities
- Collect/record information
- Create a finished product

Job Acquisition/Development
- Master specific job task/procedure
- Practice good work habits/attitudes

	Yes	No
10. Check the expiration date on the medication, and determine if the medication is usable according to facility policy.	_____	_____
11. Remove the protective covering from the vial if present.	_____	_____
12. Cleanse the rubber stopper with an alcohol swab.	_____	_____
13. Remove the syringe from packaging, handling only the barrel, flange of plunger, and needle cap.	_____	_____
14. Push the plunger completely up within the barrel.	_____	_____
15. Pull the plunger back to the desired dosage amount. (Figure 1)	_____	_____

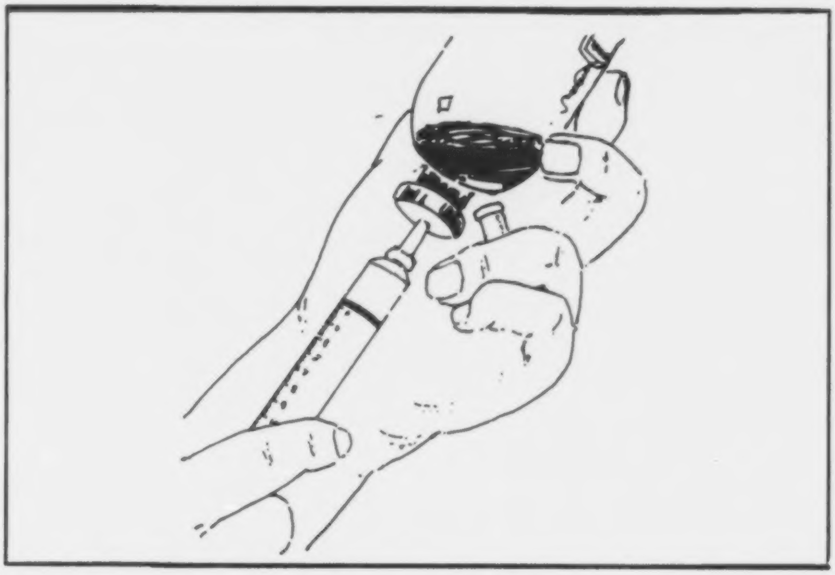
FIGURE 1



	Yes	No
16. Remove the needle cap.	_____	_____
17. Insert the needle into the center of the vial, avoiding any previous puncture sites.	_____	_____
18. Inject air from syringe into air space of vial.	_____	_____

	Yes	No
19. Check again that the vial is the correct medication and invert the vial with the label toward you. (Figure 2)	____	____

FIGURE 2



	Yes	No
20. Position the needle lumen beneath the level of the fluid.	____	____
21. Withdraw the correct amount of medication.	____	____
☑ **NOTE:** Use an appropriate method to remove air if needed.		
22. Remove the needle from the vial.	____	____
23. Place the cap on the needle.	____	____
24. Check again that the vial is the correct medication.	____	____
25. Return the multi-dose vial to the storage area or dispose of the empty vial.	____	____
26. Place the injection on the medication tray.	____	____

SKILL TEST RECORD

EVALUATOR'S COMMENTS

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.

3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.

2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.

1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

JOB
SHEET 2

ADMINISTERING MEDICATIONS

4

Name ______________________________

OBJECTIVE 19

Prepare an injection from an ampule.

EQUIPMENT AND SUPPLIES

- Syringe with attached needle
- Gloves
- Filter needle
- Needle of appropriate size for injection
- Medication order
- Medication card/sheet
- Alcohol swab or gauze pad
- Medication tray
- Medication cart
- Ampule

PROCEDURE

Research and Reference
- Select useful resources

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary
- Interpret abbreviations/ acronyms

Assessment and Analysis	Yes	No
1. Verify the medication order. a. Read the physician's order. b. Read the medication card/sheet.	_____	_____
2. Determine the correct dosage.	_____	_____
3. Determine the size of syringe needed.	_____	_____
4. Verify that the medication is not outdated.	_____	_____
Planning		
5. Wash your hands.	_____	_____
6. Select and organize the equipment.	_____	_____
7. Obtain the medication ampule.	_____	_____
8. Keep the medication card or sheet in position for easy reading.	_____	_____

Language
- Use standard grammar, spelling, and capitalization

Functional Writing
- Complete forms and records

General Science
- Use scientific instruments

Life Science
- Investigate health issues

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals
- Convert units of measure

Math Application
- Select/apply mathematical formulae
- Use English and metric measures
- Solve ratio/ proportion problems

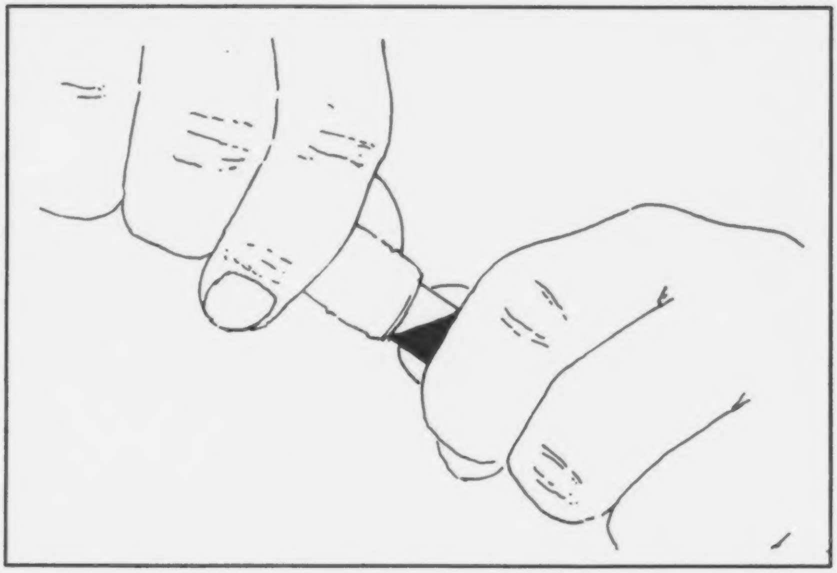
Functional Math
- Make measurements

Cognitive Activities
- Collect/record information
- Create a finished product

Implementation	Yes	No
9. Compare the name of medication with the medication card/sheet.	____	____
10. Tap the ampule, if needed, to move the medication to the base.	____	____
11. Place an alcohol swab or gauze pad around the neck of the ampule.	____	____
12. Hold your hands away from your face and apply solid pressure to the top of the ampule to break it. (Figure 1)	____	____

⚠ WARNING: Eye injury possible. Medication and glass may fly into your eyes. Avoid breaking the ampule toward your face.

FIGURE 1



13. Place the ampule on a surface and discard the top.	____	____
14. Place a filter needle on the syringe.	____	____
15. Insert the filter needle into the ampule.	____	____
16. Invert the ampule.	____	____

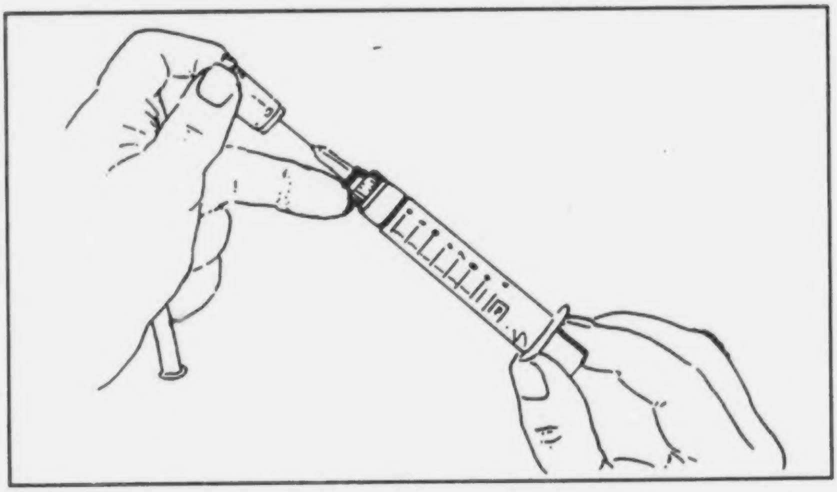
Job Acquisition/ Development

- Master specific job task/procedure
- Practice good work habits/attitudes

	Yes	No
17. Withdraw the medication from the ampule. (Figure 2)	______	______

☑ **NOTE:** Keep the needle below the level of the fluid medication.

FIGURE 2



	Yes	No
18. Check again that the ampule is the correct medication.	______	______
19. Remove the filter needle from the ampule.	______	______
20. Check again that the ampule is the correct medication and discard the ampule appropriately.	______	______
21. Discard the filter needle appropriately.	______	______
22. Replace the filter needle with appropriate needle for injection.	______	______
23. Push the medication to the desired dose or until medication appears at the tip of the needle.	______	______
24. Cap the needle and place on the medication tray.	______	______
25. Wash your hands.	______	______

SKILL TEST RECORD

EVALUATOR'S COMMENTS

____

____

____

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

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Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

JOB SHEET 3

ADMINISTERING MEDICATIONS

4

Name ______________________________

OBJECTIVE 20 **Administer sublingual medication.**

EQUIPMENT AND SUPPLIES

- Sublingual tablet
- Medicine cup
- Medication order with sublingual medication ordered
- Medication card/sheet
- Pen
- Patient or mannequin
- Medication cart or cabinet
- Clean glove

PROCEDURE

Research and Reference
- Select useful resources

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary
- Interpret abbreviations/acronyms

Language
- Use standard grammar, spelling, and capitalization

Functional Writing
- Complete forms and records

Assessment and Analysis	Yes	No
1. Assess the patient's medication record to identify which medication is to be given to the individual patient.	_____	_____
2. Verify the medication order for sublingual medication. a. Read the doctor's order sheet. b. Read the medication card/sheet.	_____	_____
3. Check the 5 rights of medication administration. a. Check the patient name. b. Check the name of the medication. c. Check the dosage of the medication. d. Check the route of medication. e. Check the date and time for the medication.	_____	_____
4. Review the literature on the specific medication.	_____	_____
5. Determine what equipment will be needed and determine correct dosage.	_____	_____

Planning	Yes	No
6. Wash your hands.	______	______
7. Gather equipment.	______	______
Implementation		
8. Read the name of medication to be given from the record.	______	______
9. Check the label when taken from the shelf or drawer.	______	______
10. Check the label when pouring medication.	______	______
11. Remove the correct amount of medication: • tablet a. Pour correct dosage from the bottle into the bottle cap. b. Transfer to the medicine cup unless prepackaged. • unit-dose medication a. Place the package containing medication in the medicine cup.	______	______
12. Check the label again when returning the medication to the shelf or drawer.	______	______
13. Place the medication on the tray or cart.	______	______
14. Place the patient medication card with the medication (optional).	______	______
15. Identify the patient before giving the medication. a. Read the identification band. b. Verbalize or ask the patient's name for verification.	______	______
16. Instruct the patient on the medication. a. State the purpose of the medication. b. State correct placement of the medication. c. Check for patient questions.	______	______

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals

Life Science
- Investigate health issues

Oral Presentation
- Adapt presentation to specific audience

Interactive Communications
- Give/follow oral directions
- Communicate with clients/customers/patients

Cognitive Activities
- Collect/record information
- Create a finished product

Job Acquisition/ Development
- Master specific job task/procedure
- Practice good work habits/attitudes

	Yes	No
17. Wash your hands.		
18. Put on glove.	____	____
19. Place the sublingual medication under the patient's tongue using gloved hand (or observe while the patient places medication under the tongue). ☑ **NOTE:** Stay with the patient until tablet has dissolved. Do not give water.	____	____
20. Watch the patient to be sure the medication is not swallowed.	____	____
21. Leave the patient in a comfortable position.	____	____
22. Discard the medication cup as appropriate.	____	____
23. Wash your hands.	____	____
Evaluation		
24. Evaluate according to the five rights and, if appropriate to the drug, return in 30 minutes to check for desired effects and side effects. If nitroglycerin was given, remain 5 minutes or until relief is obtained.	____	____
Documentation		
25. Record accurately according to the policies of the facility. a. name of medication b. dosage c. route d. time of administration e. signature	____	____

SKILL TEST RECORD

EVALUATOR'S COMMENTS

____

____

____

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

JOB SHEET 4

ADMINISTERING MEDICATIONS

4

Name ______________________________

OBJECTIVE 21

Administer buccal medication.

EQUIPMENT AND SUPPLIES

- Buccal tablet
- Medicine cup
- Medication order with buccal medication order
- Medication card/sheet
- Medication cart or cabinet
- Clean glove

PROCEDURE

Research and Reference
- Select useful resources

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary
- Interpret abbreviations/ acronyms

Language
- Use standard grammar, spelling, and capitalization

Functional Writing
- Complete forms and records

Assessment and Analysis	Yes	No
1. Assess the medication record to identify which medication is to be given to the individual patient.	____	____
2. Verify the medication order for buccal medication. a. Read the doctor's order sheet. b. Read the medication card/sheet.	____	____
3. Review information regarding the medication.	____	____
4. Check the 5 rights of medication administration. a. Check the patient name. b. Check the name of the medication. c. Check the dosage of the medication. d. Check the route of medication. e. Check the date and time for the medication.	____	____
5. Determine what equipment will be needed and safe dosage.	____	____

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals

Life Science
- Investigate health issues

Oral Presentation
- Adapt presentation to specific audience

Interactive Communications
- Give/follow oral directions
- Communicate with clients/customers/patients

Cognitive Activities
- Collect/record information
- Create a finished product

Job Acquisition/ Development
- Master specific job task/procedure
- Practice good work habits/attitudes

Planning	Yes	No
6. Wash your hands.		
7. Gather equipment.		
Implementation		
8. Read the name of the medication to be given from the record.		
9. Check the name of the medication when taking it from the shelf or drawer.		
10. Check the name of the medication when pouring medication.		
11. Remove the correct amount of medication: • tablet a. Pour the correct dosage from the bottle into the bottle cap. b. Transfer to the medicine cup unless prepackaged. • unit-dose medication a. Place the package containing medication in the medicine cup.		
12. Check the name of the medication when returning it to the shelf or drawer.		
13. Place the medication on the tray or cart.		
14. Place the patient medication card with the medication. (optional)		
15. Identify the patient prior to giving medication. a. Read the patient's identification band. b. Verbalize or ask the patient's name for verification.		
16. Instruct the patient on the medication. a. State the purpose of the medication.		

b. State the correct placement of the medication. Yes No
c. Check for patient questions.

17. Wash your hands. _____ _____

18. Put on glove. _____ _____

19. Place buccal medication between the patient's cheek and gum using your gloved hand (or observe while the patient places the medication between cheek and gum). _____ _____

20. Watch the patient to be sure the medication is not swallowed. _____ _____

21. Leave the patient in a comfortable position. _____ _____

22. Discard the medication cup as appropriate. _____ _____

23. Wash your hands. _____ _____

Evaluation

24. Evaluate according to the five rights and, if appropriate to the drug, return in 30 minutes to check for desired effects and side effects. _____ _____

Documentation

25. Record accurately according to the policies of the facility. _____ _____
    a. name of medication
    b. dosage
    c. route
    d. time of administration
    e. signature

SKILL TEST RECORD

EVALUATOR'S COMMENTS

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY	4 **Skilled** Can perform job with no additional training. 3 **Moderately Skilled** Has performed job during training program; limited additional training may be required. 2 **Limited Skill** Has performed job during training program; additional training is required to develop skill. 1 **Unskilled** Is familiar with process, but is unable to perform job.
EVALUATOR'S COMMENTS	

JOB SHEET 5 ADMINISTERING MEDICATIONS

Name ____________________

OBJECTIVE 22 **Apply topical mediation.**

EQUIPMENT AND SUPPLIES

- Topical medication
- Dressing as appropriate
- Medication order with buccal medication order
- Medication card/sheet
- Pen
- Patient or mannequin
- Medication cart or cabinet
- Gloves (minimum 3) - sterile or unsterile as needed
- Tongue depressor

PROCEDURE

Assessment and Analysis	Yes	No
1. Assess the medication record to identify which medication is to be given to the individual patient.	_____	_____
2. Verify the medication order for topical medication. a. Read the doctor's order sheet. b. Read the medication card/sheet.	_____	_____
3. Review the information regarding the medications.	_____	_____
4. Check the 5 rights of medication administration. a. Check the patient name. b. Check the name of the medication. c. Check the dosage of the medication. d. Check the route and location for medication. e. Check the date and time for the medication.	_____	_____

Research and Reference
- Select useful resources

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary
- Interpret abbreviations/ acronyms

Language
- Use standard grammar, spelling, and capitalization

Functional Writing
- Complete forms and records

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals

Life Science
- Investigate health issues

Oral Presentation
- Adapt presentation to specific audience

Interactive Communications
- Give/follow oral directions
- Communicate with clients/customers/patients

Cognitive Activities
- Collect/record information
- Create a finished product

Job Acquisition/ Development
- Master specific job task/procedure
- Practice good work habits/attitudes

	Yes	No
5. Check for clarification of the method of application, if needed.		
6. Review the literature for the specific medication.		
7. Determine equipment you will need and method of safe administration.		
8. Determine correct amount of medication.		
Planning		
9. Wash your hands.		
10. Gather equipment.		
Implementation		
11. Check the name of the medication when taking it from the shelf or drawer.		
12. Identify the patient before giving the medication. a. Read the patient's identification band. b. Verbalize or ask the patient's name for verification.		
13. Instruct the patient on the medication. a. State the purpose of the medication. b. State the correct placement of the medication. c. State care of the site after application. d. Check for patient questions.		
14. Provide privacy.		
15. Wash your hands.		
16. Put on glove.		
17. Remove old medication.		
18. Remove glove and wash your hands.		

	Yes	No
19. Put on clean gloves.	____	____
20. Check again that the medication is correct.	____	____
21. Apply topical medication as specified by orders.	____	____
☑ **NOTE:** Use a tongue depressor to remove medication from container or squeeze medication onto tongue depressor if needed, then use your gloved finger to remove medication from tongue depressor.		
22. Apply dressing as specified.	____	____
23. Wash your hands.	____	____
24. Check again that the medication is correct when returning it to the shelf or drawer.	____	____
Evaluation		
25. Evaluate according to the five rights, and if appropriate to the drug, return in 30 minutes to check for desired effects and side effects.	____	____
Documentation		
26. Record accurately according to the policies of the facility. Include: a. name of medication b. dosage c. route d. time of administration e. signature	____	____
27. Document instruction.	____	____
28. Document administration of medication.	____	____
29. Document effects of medication.	____	____

SKILL TEST RECORD

EVALUATOR'S COMMENTS

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS ______________________________

____

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JOB
SHEET 6

ADMINISTERING MEDICATIONS

4

Name ______________________________

OBJECTIVE 23

Administer eye medication.

EQUIPMENT AND SUPPLIES

- Eye drops/ointment
- Paper tissues and/or sterile cotton balls
- Eye dressing, if needed
- Normal saline solution
- Medication order
- Medication record

PROCEDURE

Research and Reference
- Select useful resources

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary
- Interpret abbreviations/acronyms

Language
- Use standard grammar, spelling, and capitalization

Functional Writing
- Complete forms and records

Assessment and Analysis	Yes	No
1. Assess the medication record to identify which medication is to be given to the individual patient.	____	____
2. Check the medications listed against the physician's order.	____	____
3. Review the information regarding the medications.	____	____
4. Determine accurate dosage and methods for safe administration.	____	____
Planning		
5. Determine what equipment you will need.	____	____
6. Wash your hands.	____	____
7. Gather equipment.	____	____
Implementation		
8. Read the name of the medication to be given from the record.	____	____

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals

Life Science
- Investigate health issues

Oral Presentation
- Adapt presentation to specific audience

Interactive Communications
- Give/follow oral directions
- Communicate with clients/customers/ patients

Cognitive Activities
- Collect/record information
- Create a finished product

Job Acquisition/ Development
- Master specific job task/procedure
- Practice good work habits/attitudes

	Yes	No
9. Check the label on the medication and take it from the shelf or drawer.	______	______
10. Check label again.	______	______
11. Determine if the dropper is functional and accurate for the amount needed.	______	______
12. Check label a third time.	______	______
13. Place the medication on the tray or cart.	______	______
14. Place the patient medication card with the medication. (optional)	______	______
15. Approach and identify the patient. a. Read the patient's identification band. b. Verbalize or ask the patient's name for verification.	______	______
16. Instruct the patient on the medication. a. State the purpose of the medication. b. Explain how you will administer the medication. c. Check for patient questions.	______	______
17. Wash your hands.	______	______
18. Tilt the patient's head back and support it on a pillow.	______	______
19. Instruct the patient to look up.	______	______
20. Observe the condition of the eye.	______	______
21. Remove exudate with a saline-moistened cotton ball, wiping from inner canthus to outer canthus. ☑ **NOTE:** Use separate cotton ball for each wipe.	______	______
22. Expose the lower conjunctival sac.	______	______
23. Apply the medication.	______	______

⚠ CAUTION: Never touch the eye or face with dropper or ointment tip.

- Solution
  a. Have the patient look upward.
  b. Drop the correct number of drops into the conjunctival sac.
  c. Apply gentle pressure with tissue to the inner canthus.

  ☑ **NOTE:** Wait 1 to 5 minutes between different medications.

- Ointment
  a. Apply a thin line of ointment along the lower conjunctival sac.
  b. Instruct the patient to close the eyelids and roll eyes back and forth and up and down to spread ointment.

24. Leave the patient in a comfortable position.

25. Discard the medication container as appropriate.

26. Wash your hands.

Evaluation

27. Evaluate according to the five rights and, if appropriate to the drug, return in 30 minutes to check for desired effects and side effects.

Documentation

28. Record accurately according to the policies of the facility. Include:
    a. name of medication
    b. dosage
    c. route
    d. time of administration
    e. signature

SKILL TEST RECORD

EVALUATOR'S COMMENTS

____

____

____

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS ______________________________

____

____

JOB SHEET 7

ADMINISTERING MEDICATIONS

4

Name ______________________________

OBJECTIVE 24

Administer ear medication.

EQUIPMENT AND SUPPLIES

- Otic solution with dropper
- Cotton ball
- Medication order
- Medication record

PROCEDURE

Research and Reference
- Select useful resources

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary
- Interpret abbreviations/ acronyms

Language
- Use standard grammar, spelling, and capitalization

Functional Writing
- Complete forms and records

Assessment and Analysis	Yes	No
1. Assess the medication record to identify which medication is to be given to the individual patient.	_____	_____
2. Check the medications listed against the physician's orders.	_____	_____
3. Review the information regarding the medications.	_____	_____
4. Determine what equipment you will need and the accurate dosage.	_____	_____
Planning		
5. Wash your hands.	_____	_____
6. Gather equipment.	_____	_____
Implementation		
7. Read the name of the medication to be given from the record.	_____	_____
8. Check the label on the medication and take it from the shelf or drawer.	_____	_____
9. Check the label again.	_____	_____
10. Determine that the dropper works.	_____	_____

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals

Life Science
- Investigate health issues

Oral Presentation
- Adapt presentation to specific audience

Interactive Communications
- Give/follow oral directions
- Communicate with clients/customers/patients

Cognitive Activities
- Collect/record information
- Create a finished product

Job Acquisition/ Development
- Master specific job task/procedure
- Practice good work habits/attitudes

	Yes	No
11. Check the label a third time.		
12. Place the medication on the tray or cart.		
13. Place the patient medication card with the medication. (optional)		
14. Approach and identify the patient. a. Read the patient's identification band. b. Verbalize or ask the patient's name for verification.		
15. Instruct the patient on the medication. a. State the purpose of the medication. b. Explain how you will administer the medication. c. Check for patient questions.		
16. Check the ear canal for excess wax.		
☑ **NOTE:** Obtain an order for irrigation if the canal is blocked by wax.		
17. Position the patient with the affected ear up.		
18. Pull the earlobe correctly according to the patient's age.		
19. Drop the medication into the ear canal without touching the patient's ear or face with the dropper.		
20. Insert a cotton ball if ordered.		
21. Instruct the patient to remain in position with the ear facing up for several minutes.		
22. Leave the patient in a comfortable position.		
23. Discard the medication container as appropriate.		
24. Wash your hands.		

	Yes	No
Evaluation		
25. Evaluate according to the five rights and, if appropriate to the drug, return in 30 minutes to check for desired effects and side effects.	____	____
Documentation		
26. Record accurately according to the policies of the facility. Include: a. name of medication b. dosage c. route d. time of administration e. signature	____	____

SKILL TEST RECORD

EVALUATOR'S COMMENTS

____

____

____

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1

Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

____

____

____

JOB
SHEET 8

ADMINISTERING MEDICATIONS

4

Name ____________________

OBJECTIVE 25

Administer nasal medication.

EQUIPMENT AND SUPPLIES

- Nasal drops or spray
- Tissues
- Medication order
- Medication record

PROCEDURE

Research and Reference
- Select useful resources

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary
- Interpret abbreviations/ acronyms

Language
- Use standard grammar, spelling, and capitalization

Functional Writing
- Complete forms and records

	Yes	No
Assessment and Analysis		
1. Assess the medication record to identify which medication is to be given to the individual patient.	_____	_____
2. Check the medications listed against the physician's orders.	_____	_____
3. Review the information regarding the medications.	_____	_____
4. Determine what equipment you will need and accurate dosage.	_____	_____
Planning		
5. Wash your hands.	_____	_____
6. Gather equipment.	_____	_____
Implementation		
7. Read the name of the medication to be given from the record.	_____	_____
8. Check the label on the medication and take it from the shelf or drawer.	_____	_____
9. Check the label again.	_____	_____

	Yes	No
10. Determine that the correct amount of medication is available.	______	______
11. Check the label a third time.	______	______
12. Place the medication on the tray or cart.	______	______
13. Place the patient medication card with the medication. (optional)	______	______
14. Approach and identify the patient. a. Read the patient's identification band. b. Verbalize or ask the patient's name for verification.	______	______
15. Instruct the patient on the medication. a. State the purpose of the medication. b. Explain how you will administer the medication. c. Check for patient questions.	______	______
16. Administer the medication. Drops a. Tilt the patient's head far back. b. Instill ordered drops into nostril(s). c. Instruct the patient to stay in position with the head back for 2 to 3 minutes. Spray a. Shake the spray bottle and hold it upright. b. Position the patient with the head held erect. c. Block one nostril. d. Instruct the patient to breathe slowly through the unblocked nostril. e. Instill puff or spray.	______	______
17. Have tissues available but instruct the patient to avoid blowing nose.	______	______
18. Leave the patient in a comfortable position.	______	______

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals

Life Science
- Investigate health issues

Oral Presentation
- Adapt presentation to specific audience

Interactive Communications
- Give/follow oral directions
- Communicate with clients/customers/patients

Cognitive Activities
- Collect/record information
- Create a finished product

Job Acquisition/Development
- Master specific job task/procedure
- Practice good work habits/attitudes

	Yes	No
19. Discard the medication container as appropriate.	____	____
20. Wash your hands.	____	____
Evaluation		
21. Evaluate according to the five rights and, if appropriate to the drug, return in 30 minutes to check for desired effects and side effects.	____	____
Documentation		
22. Record accurately according to the policies of the facility. Include: a. name of medication b. dosage c. route d. time of administration e. signature	____	____

SKILL TEST RECORD

EVALUATOR'S COMMENTS

____

____

____

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

JOB
SHEET 9

ADMINISTERING MEDICATIONS

4

Name ______________________________

OBJECTIVE 26 **Administer oral medication.**

EQUIPMENT AND SUPPLIES

- Oral medication(s)
- Medicine cups
- Medication order
- Medication card/sheet
- Medication cart
- Medication tray
- Patient or mannequin
- Pen

PROCEDURE

Assessment and Analysis	Yes	No
1. Assess the medication record to identify which medication is to be given to the individual patient.	_____	_____
2. Check the medications listed against the physician's orders.	_____	_____
3. Review the information regarding the medications.	_____	_____
4. Assess the patient's ability to swallow medications.	_____	_____
5. Assess the patient's need for prn medications.	_____	_____
6. Determine what equipment you will need and accurate dosage.	_____	_____
Planning		
7. Wash your hands.	_____	_____
8. Gather equipment.	_____	_____

Research and Reference
- Select useful resources

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary
- Interpret abbreviations/ acronyms

Language
- Use standard grammar, spelling, and capitalization

Functional Writing
- Complete forms and records

Implementation Yes No

9. Read the name of the medication to be given. _____ _____

10. Check the label on the medication and take it from the shelf or drawer. _____ _____

11. Check the label again before pouring. _____ _____

12. Remove the correct amount of medication. _____ _____
    - tablet or capsule
        a. Pour the correct dosage from the bottle into the bottle cap.
        b. Transfer to the medicine cup unless prepackaged.
    - liquid
        a. Remove the bottle cap and place it upside down on the countertop.
        b. Holding the cup at eye level, with the label of the medication bottle facing up, pour liquid to desired level.
        c. Wipe the neck of the bottle before replacing the cap.
    - unit dosage
        a. Place the medication package in the medicine cup.

13. Return the bottle to the shelf or drawer, checking the label a third time. _____ _____

14. Place the medication on the tray or cart. _____ _____

15. Place the patient medication card with the medication. (optional) _____ _____

16. Approach and identify the patient. _____ _____
    a. Read the patient's identification band.
    b. Verbalize or ask the patient's name for verification.

17. Instruct the patient on the medication. _____ _____
    a. State the purpose of the medication.

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals

Life Science
- Investigate health issues

Oral Presentation
- Adapt presentation to specific audience

Interactive Communications
- Give/follow oral directions
- Communicate with clients/customers/patients

Cognitive Activities
- Collect/record information
- Create a finished product

Job Acquisition/Development
- Master specific job task/procedure
- Practice good work habits/attitudes

	Yes	No
b. Explain how you will administer the medication. c. Check for patient questions.		
18. Give the patient the medication and a glass of water.	____	____
19. Observe the patient to be sure the medication is swallowed.	____	____
20. Leave patient in a comfortable position.	____	____
21. Discard the medication container as appropriate.	____	____
22. Wash your hands.	____	____
Evaluation		
23. Evaluate according to the five rights and, if appropriate to the drug, return in 30 minutes to check for desired effects and side effects.	____	____
Documentation		
24. Record accurately according to the policies of the facility. Include: a. name of medication b. dosage c. route d. time of administration e. signature	____	____

SKILL TEST RECORD

EVALUATOR'S COMMENTS

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PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

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JOB SHEET 10

ADMINISTERING MEDICATIONS

4

Name ______________________________

OBJECTIVE 27

Crush medication for administration.

EQUIPMENT AND SUPPLIES

- Pill crusher or mortar and pestle
- Tablet to be crushed
- Souffle cup
- Medicine cup

PROCEDURE

Research and Reference
- Select useful resources

Functional Reading
- Interpret forms and records
- Follow written instructions
- Interpret abbreviations/ acronyms

Language
- Use standard grammar, spelling, and capitalization

Functional Writing
- Complete forms and records

	Yes	No
Assessment and Analysis		
1. Assess the medication record to identify which medication is to be given to the individual patient.	____	____
2. Check the medications listed against the physician's orders.	____	____
3. Review the literature or check with the pharmacist about crushing specific medications.	____	____
4. Assess the patient for the need for crushed medications.	____	____
5. Determine the accurate dosage.	____	____
6. Determine equipment needed.	____	____
7. Determine the individual needs and preferences of each patient.	____	____
Planning		
8. Wash your hands.	____	____
9. Obtain the tablet to be crushed.	____	____

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals

Life Science
- Investigate health issues

Cognitive Activities
- Collect/record information
- Create a finished product

Job Acquisition/ Development
- Master specific job task/procedure
- Practice good work habits/attitudes

	Yes	No
☑ **NOTE:** As with any medication, check that you have the correct medication 3 times.		
10. Organize equipment needed.	______	______
Implementation		
11. Pour the tablet into the lid of the container, then place it in a souffle cup or medicine cup.	______	______
12. Place the tablet in the crushing device. a. Place tablet in souffle cup into pill crusher OR b. Place tablet into mortar.	______	______
13. Apply pressure for crushing. a. Bring down the handle of the pill crusher OR b. Use the pestle to crush the pill.	______	______
Evaluation		
14. Check that the medication is crushed. Repeat step 13 as needed.	______	______
15. Pour the medication into the final medicine cup.	______	______
16. Clean the pill crusher or mortar and pestle.	______	______
17. Wash your hands.	______	______

SKILL TEST RECORD

EVALUATOR'S COMMENTS

____

____

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PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

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JOB SHEET 11

ADMINISTERING MEDICATIONS

4

Name ______________________________

OBJECTIVE 28

Administer medication by nasogastric tube.

EQUIPMENT AND SUPPLIES

- Glass of room temperature water
- Syringe (5-10 ml for adult or 1 ml for young child)
- Stethoscope
- Medication - liquid form
- Bulb or asepto syringe with catheter tip
- Patient or mannequin with nasogastric tube
- Perineal pad

PROCEDURE

Assessment and Analysis	Yes	No
1. Assess the medication record to identify which medication is to be given to the individual patient.	____	____
2. Check the medications listed against the physician's orders.	____	____
3. Review the literature or information specific to the medication.	____	____
4. Assess the patency and placement of nasogastric just prior to administering any medications.	____	____
5. Read any notations on the chart about previous feedings.	____	____
6. Determine if the medication can safely and effectively be given through the size nasogastric tube in place.	____	____
7. Determine if the effectiveness of the medication is altered by diluting or crushing.	____	____

Research and Reference
- Select useful resources

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary
- Interpret abbreviations/ acronyms

Language
- Use standard grammar, spelling, and capitalization

Functional Writing
- Complete forms and records

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals

Life Science
- Investigate health issues

Oral Presentation
- Adapt presentation to specific audience

Interactive Communications
- Give/follow oral directions
- Communicate with clients/customers/patients

Cognitive Activities
- Collect/record information
- Create a finished product

Job Acquisition/ Development
- Master specific job task/procedure
- Practice good work habits/attitudes

	Yes	No
8. Determine the safest patient position for administering medications via the nasogastric tube (this will vary with the patient's condition).	_____	_____
9. Determine the required interventions for maintaining patency of the tube.	_____	_____
Planning		
10. Wash your hands.	_____	_____
11. Gather and organize needed equipment.	_____	_____
12. Obtain the correct medication.	_____	_____
Implementation		
13. Approach and identify the patient. a. Read the patient's identification band. b. Verbalize or ask the patient's name for verification.	_____	_____
14. Instruct the patient on the medication. a. State the purpose of the medication. b. State that the medication will be given through the N/G. c. Check for patient questions.	_____	_____
15. Assemble the equipment at bedside. a. Place the perineal pad under the N/G connection site. b. Provide water for flushing the tube. c. Place the asepto or bulb syringe on the overbed table. d. Place the small syringe on the overbed table. e. Have the stethoscope available. f. Have the medication on the overbed table.	_____	_____
16. Position the patient upright, if condition allows.	_____	_____
17. Check placement of the N/G tube. a. Aspirate stomach contents.	_____	_____

	Yes	No
b. Place the stethoscope over the patient's stomach and listen for a gurgling sound as you insert air into the N/G (preferred method).		
c. Place the unclamped N/G next to your ear and listen for a crackling noise.		
d. Place the end of the N/G in water and watch for bubbling with respirations.		
18. Clamp the tubing and attach the asepto or bulb syringe.		
19. With the tubing still clamped, pour water into the syringe.		
20. Unclamp the syringe and allow the water to run by gravity.		
21. Observe for signs of aspiration.		
22. Clamp the tubing and pour the medication into the syringe.		
23. Unclamp the tubing and allow the medication to run by gravity.		
24. Repeat steps 22 and 23 for each medication.		
25. Clamp the tubing and pour water into the syringe.		
26. Unclamp the tubing and allow the water to run by gravity OR clamp tubing and reconnect to continuous feeding.		
27. Reposition the patient with the head turned to one side.		
28. Wash your hands.		

Evaluation

29. Evaluate according to the five rights and, if appropriate to the drug, return in 30 minutes to check for desired effects and side effects.		

Documentation	Yes	No
30. Record accurately according to the policy of the facility. Include: a. name of medication b. dosage c. route d. time of administration e. signature	_____	_____

SKILL TEST RECORD

EVALUATOR'S COMMENTS

____

____

____

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

JOB SHEET 12

ADMINISTERING MEDICATIONS

4

Name ______________________________

OBJECTIVE 29

Administer a subcutaneous injection.

EQUIPMENT AND SUPPLIES

- Alcohol swabs
- Syringe (1-3 ml)
- 3/8", ½", and 5/8" needles with gauges 25-27
- Patient or mannequin with injectable areas
- Gloves
- Medication order
- Medication card/sheet
- Injectable subcutaneous medication

PROCEDURE

Research and Reference
- Select useful resources

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary
- Interpret abbreviations/acronyms

Language
- Use standard grammar, spelling, and capitalization

Functional Writing
- Complete forms and records

Assessment and Analysis	Yes	No
1. Assess the medication record to identify which medication is to be given to the individual patient.	_____	_____
2. Check the medications listed against the physician's orders.	_____	_____
3. Review information regarding the medications.	_____	_____
4. Assess the size and general build of patient.	_____	_____
5. Assess your need for assistance.	_____	_____
6. Determine the appropriate needle and syringe to be used.	_____	_____
Planning		
7. Wash your hands.	_____	_____
8. Gather equipment. a. Obtain the medication ordered. b. Choose the appropriate syringe.	_____	_____

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals
- Convert units of measure

General Science
- Use scientific instruments

Life Science
- Investigate health issues

Oral Presentation
- Adapt presentation to specific audience

Interactive Communications
- Give/follow oral directions
- Communicate with clients/customers/ patients

Cognitive Activities
- Collect/record information
- Create a finished product

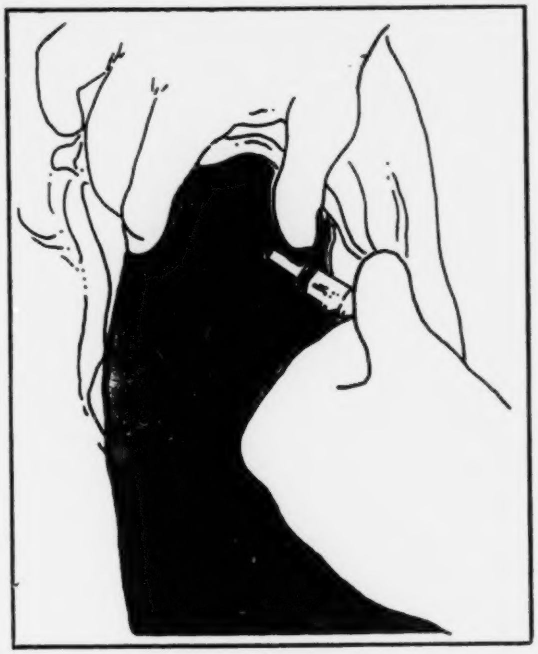
	Yes	No
c. Choose the appropriate needle.		
d. Connect the syringe and needle.		
e. Obtain alcohol swabs.		
f. Have the correct medication card/sheet on the working area.		
Implementation		
9. Read the name of the mediation to be given from the record.	_____	_____
10. Check the label on the medication and take it from the shelf, drawer, or refrigerator.	_____	_____
11. Check the label again before drawing.	_____	_____
12. Draw up the ordered medication (refer to Job Sheets 1 and 2).	_____	_____
13. Re-examine the vial or ampule to check the label a third time and recalculate the dosage.	_____	_____
14. Place the syringe, needle, and alcohol swab on the tray.	_____	_____
15. Place the patient medication card with the medication. (optional)	_____	_____
16. Approach and identify the patient. a. Read the patient's identification band. b. Verbalize or ask the patient's name for verification.	_____	_____
17. Instruct the patient on the medication and verify the appropriate site.	_____	_____
18. Provide privacy.	_____	_____
19. Wash your hands.	_____	_____
20. Put on gloves.	_____	_____
21. Choose the site for the injection.	_____	_____
22. Pinch up the skin around the site.	_____	_____
23. Cleanse the site with alcohol swab.	_____	_____

Job Acquisition/ Development

- Master specific job task/procedure
- Practice good work habits/attitudes

	Yes	No
24. Uncap the needle.	____	____
25. With the bevel up (toward the patient's head), insert the needle quickly into the site at 45° angle. (Figure 1)	____	____

FIGURE 1



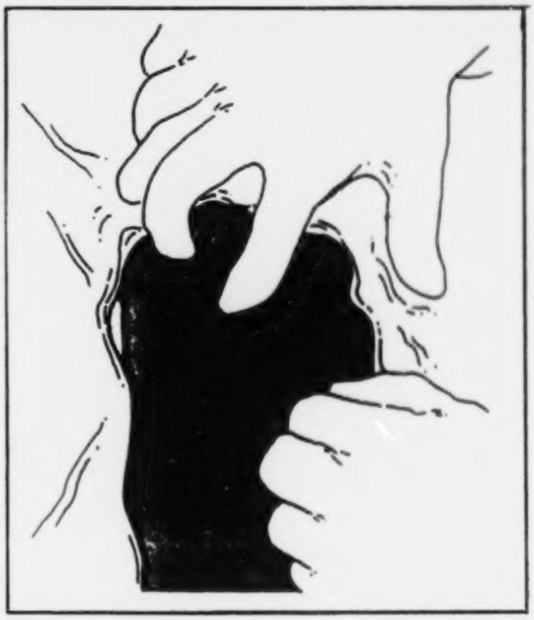
	Yes	No
26. Aspirate a small amount.	____	____

WARNING: Air is expected. If blood appears, remove the needle immediately and select a different site.

	Yes	No
27. Inject the total amount of medication.	____	____
28. Hold an alcohol sponge over the injection site and withdraw the needle. (Figure 2)	____	____

Yes No

FIGURE 2



29. Gently massage the site. ____ ____

30. Immediately dispose of the needle and syringe into a puncture-proof container. ____ ____

⚠ **WARNING**: Needlestick injury possible. Never recap a used needle.

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31. Wash your hands. ____ ____

32. Leave the patient in a comfortable position. ____ ____

Evaluation

33. Evaluate according to the five rights and, if appropriate to the drug, return in 30 minutes to check for desired effects and side effects. ____ ____

Documentation ____ ____

34. Record accurately according to the policy of the facility. Include:
    a. name of medication
    b. dosage
    c. route
    d. time of administration
    e. signature

SKILL TEST RECORD

EVALUATOR'S COMMENTS

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PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING	**Evaluator note:** To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.
KEY	4 **Skilled** – Can perform job with no additional training. 3 **Moderately Skilled** – Has performed job during training program; limited additional training may be required. 2 **Limited Skill** – Has performed job during training program; additional training is required to develop skill. 1 **Unskilled** – Is familiar with process, but is unable to perform job.
EVALUATOR'S COMMENTS	

JOB SHEET 13

ADMINISTERING MEDICATIONS

4

Name ______________________________

OBJECTIVE 30

Administer subcutaneous insulin.

EQUIPMENT AND SUPPLIES

- Alcohol swabs
- Insulin syringes (U-100) with needles attached
- 3/8", ½", and 5/8" needles with gauges 25-27
- Patient or mannequin with injectable areas
- Gloves
- Medication order
- Medication card/sheet
- Insulin for order

PROCEDURE

Assessment and Analysis	Yes	No
1. Assess the medication record to identify which medication is to be given to the individual patient.	_____	_____
2. Check the medications listed against the physician's orders.	_____	_____
3. Check the patient's most recent blood sugar. If below 100 mg, check the policy for action; if below 70, give the form of glucose specified by policy.	_____	_____
4. Review information regarding the medications.	_____	_____
5. Assess the size and general build of patient.	_____	_____
6. Check the chart to determine the previous injection site.	_____	_____
7. Assess your need for assistance.	_____	_____
8. Determine the appropriate needle and syringe to be used.	_____	_____

Research and Reference
- Select useful resources

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary
- Interpret abbreviations/ acronyms

Language
- Use standard grammar, spelling, and capitalization

Functional Writing
- Complete forms and records

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals
- Convert units of measure

General Science
- Use scientific instruments

Life Science
- Investigate health issues

Oral Presentation
- Adapt presentation to specific audience

Interactive Communications
- Give/follow oral directions
- Communicate with clients/customers/patients

Cognitive Activities
- Collect/record information
- Create a finished product

Planning Yes No

9. Wash your hands. ______ ______

10. Gather equipment. ______ ______
    a. Obtain the medication ordered.
    b. Choose the appropriate syringe.
    c. Choose the appropriate needle.
    d. Connect the syringe and needle.
    e. Obtain alcohol swabs.
    f. Have the correct medication card/sheet on the working area.

Implementation

11. Read the complete name of medication to be given from the record. ______ ______

12. Check the label on the medication and take it from the shelf or drawer. ______ ______

13. Check the label again before calculating and preparing dosage. ______ ______

14. Draw up the correct medication in units. ______ ______
    a. Check the expiration date on the vial.
    b. Gently rotate the vial between your palms.
    c. Draw the medication from the vial; verify that you have the exact volume needed.
    d. Have another licensed nurse verify the type, dosage, and expiration date.
    e. Recheck the name of medication.
    f. Replace the medication in the refrigerated area.

15. Place the syringe, needle, and alcohol swab on the tray. ______ ______

16. Place the patient medication card with the medication. (optional) ______ ______

17. Approach and identify the patient. ______ ______
    a. Read the patient's identification band.
    b. Verbalize or ask the patient's name for verification.

Job Acquisition/ Development

- Master specific job task/procedure
- Practice good work habits/attitudes

	Yes	No
18. Instruct the patient on the medication and verify the appropriate site.	______	______
19. Instruct the patient to watch for hypoglycemia.	______	______
20. Provide privacy.	______	______
21. Wash your hands.	______	______
22. Put on gloves.	______	______
23. Choose the injection site.	______	______
24. Pinch the skin around site.	______	______
25. Cleanse the site with an alcohol swab.	______	______
26. Uncap the needle.	______	______
27. With the bevel up (toward the patient's head), insert the needle quickly into the site at a 45° angle.	______	______
28. Aspirate a small amount.	______	______

⚠ **WARNING**: Air is expected. If blood appears, remove the needle immediately and select a different site.

	Yes	No
29. Inject the total amount of medication.	______	______
30. Hold an alcohol sponge over the injection site and withdraw the needle.	______	______
31. Pat the injection site (do not massage).	______	______
32. Immediately dispose of the needle and syringe into a puncture-proof container.	______	______

⚠ **WARNING**: Needlestick injury possible. Never recap a used needle.

	Yes	No
33. Wash your hands.	______	______

Evaluation	Yes	No
34. Evaluate according to the five rights and, if appropriate to the drug, return in 30 minutes to check for desired effects and side effects.	____	____
Documentation		
35. Record accurately according to the policy of the facility. Include: a. name of medication b. dosage c. route d. time of administration e. signature	____	____

SKILL TEST RECORD

EVALUATOR'S COMMENTS

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PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1

Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

JOB SHEET 14

ADMINISTERING MEDICATIONS

4

Name ______________________________

OBJECTIVE 31 **Administer subcutaneous heparin.**

EQUIPMENT AND SUPPLIES

- Alcohol swabs
- 1 cc tuberculin syringes with ½" needles gauges 26-27
- Patient or mannequin with injectable areas
- Gloves
- Medication order
- Medication card/sheet
- Medication

PROCEDURE

Assessment and Analysis	Yes	No
1. Assess the medication record to identify which medication is to be given to the individual patient.	_____	_____
☑ **NOTE:** Check the most recent PT for a range 1½ - 2½ times control level.		
2. Check the medications listed against the physician's orders.	_____	_____
3. Review information regarding the medications.	_____	_____
4. Assess the size and general build of the patient.	_____	_____
5. Assess your need for assistance.	_____	_____
6. Determine the appropriate needle and syringe to be used.	_____	_____
Planning		
7. Wash your hands.	_____	_____

Research and Reference
- Select useful resources

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary
- Interpret abbreviations/ acronyms

Language
- Use standard grammar, spelling, and capitalization

Functional Writing
- Complete forms and records

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals
- Convert units of measure

Math Application
- Select/apply mathematical formulae
- Use English and metric measures
- Solve ratio/proportion problems
- Make measurements

General Science
- Use scientific instruments

Life Science
- Investigate health issues

Oral Presentation
- Adapt presentation to specific audience

Interactive Communications
- Give/follow oral directions
- Communicate with clients/customers/patients

Yes No

8. Gather equipment. ______ ______
   a. Obtain the medication ordered.
   b. Choose the appropriate syringe.
   c. Choose the appropriate needle.
   d. Connect the syringe and needle.
   e. Obtain alcohol swabs.
   f. Have the correct medication card/sheet on the working area.

Implementation

9. Read the name of the medication to be given from the record. ______ ______

10. Check the label on the medication and take it from the shelf or drawer. ______ ______

11. Check the label again before drawing up medication. ______ ______

12. Draw up the ordered medication ______ ______
    a. Check the medication for the correct name.
    b. Check the expiration date of the vial.
    c. Calculate the correct dose.
    d. Check the medication for correct strength.
    e. Determine the correct time to give.
    f. Check the route of administration to be used.
    g. Gently rotate the vial between your palms.
    h. Draw the medication from the vial; verify that you have drawn the correct amount.
    i. Have another licensed nurse verify the type, dosage, and expiration date.
    j. Change needles.
    k. Recheck the name of the medication prior to storage.
    l. Replace the medication into the refrigerated area.

13. Place the syringe, needle, and alcohol swab on the tray. ______ ______

14. Place the patient medication card with the medication. (optional) ______ ______

Cognitive Activities

- Collect/record information
- Create a finished product

Job Acquisition/ Development

- Master specific job task/procedure
- Practice good work habits/attitudes

	Yes	No
15. Approach and identify the patient. a. Read the patient's identification band. b. Verbalize or ask the patient's name for verification.	_____	_____
16. Instruct the patient on the medication and verify the appropriate site.	_____	_____
17. Instruct the patient to be aware of side effects such as bleeding gums, bruising, excessive menstrual flow, etc.	_____	_____
18. Provide privacy.	_____	_____
19. Wash your hands.	_____	_____
20. Put on gloves.	_____	_____
21. Choose the injection site (usually in the abdomen).	_____	_____
22. Bunch a fold of skin near the site.	_____	_____
23. Cleanse the site with alcohol swab.	_____	_____
24. With the bevel up (toward the patient's head), insert the needle quickly into the site at 90° angle.	_____	_____

CAUTION: Local hemorrhage possible. Do not aspirate for blood before injecting heparin.

25. Inject the total amount of medication.	_____	_____
26. Wait a few seconds, then remove the needle.	_____	_____

CAUTION: Local hemorrhage possible. Do not massage site after injecting heparin.

Yes No

27. To help prevent bruising, apply firm pressure to the injection site until all bleeding has stopped. ______ ______

☑ **NOTE:** Ice can be applied to the site for 15 to 30 minutes for patients who bruise easily.

28. Immediately dispose of the needle and syringe into a puncture-proof container. ______ ______

⚠ **WARNING**: Needlestick injury possible. Never recap a used needle.

---

29. Wash your hands. ______ ______

Evaluation

30. Evaluate according to the five rights and, if appropriate to the drug, return in 30 minutes to check for desired effects and side effects. ______ ______

Documentation

34. Record accurately according to the policy of the facility. Include: ______ ______
    a. name of medication
    b. dosage
    c. route
    d. time of administration
    e. signature

SKILL TEST RECORD

EVALUATOR'S COMMENTS

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PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:

Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

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JOB SHEET 15

ADMINISTERING MEDICATIONS

4

Name ______________________________

OBJECTIVE 32 **Administer an intramuscular injection.**

EQUIPMENT AND SUPPLIES

- Alcohol swabs
- 1 cc or 3 cc syringes
- 1", 1½", and 2" needles with gauges 21 - 25
- Patient or mannequin with injectable areas
- Gloves
- Medication order
- Medication card/sheet
- Injectable IM medication

PROCEDURE

Research and Reference
- Select useful resources

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary
- Interpret abbreviations/ acronyms

Language
- Use standard grammar, spelling, and capitalization

Functional Writing
- Complete forms and records

Assessment and Analysis	Yes	No
1. Assess the medication record to identify which medication is to be given to the individual patient.	____	____
2. Check the medications listed against the physician's orders.	____	____
3. Review information regarding the medications.	____	____
4. Assess the size and general build of the patient.	____	____
5. Assess your need for assistance.	____	____
6. Determine the appropriate needle and syringe to be used.	____	____
Planning		
7. Wash your hands.	____	____
8. Gather equipment. a. Obtain the medication ordered. b. Choose the appropriate syringe.	____	____

c. Choose the appropriate needle. Yes No
d. Connect the syringe and needle.
e. Obtain alcohol swabs.
f. Have the correct medication card/sheet on the working area.

Implementation

9. Read the name of the medication to be given from the record. ______ ______

10. Check the label on the medication and take it from the shelf or drawer. ______ ______

11. Check the label again before drawing up the medication. ______ ______

12. Draw up the ordered medication. ______ ______

13. Check the label a third time and recalculate the dosage. ______ ______

14. Place the syringe, needle, and alcohol swab on the tray. ______ ______

15. Place the patient medication card with the medication. (optional) ______ ______

16. Approach and identify the patient. ______ ______
    a. Read the patient's identification band.
    b. Verbalize or ask the patient's name for verification.

17. Instruct the patient on the medication and verify the appropriate site. ______ ______

18. Provide privacy. ______ ______

19. Wash your hands. ______ ______

20. Put on gloves. ______ ______

21. Choose the injection site. ______ ______

22. Cleanse the site with the alcohol swab and allow to dry. ______ ______

23. Uncap the needle. ______ ______

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals
- Convert units of measure

Math Application
- Select/apply mathematical formulae
- Use English and metric measures
- Solve ratio/ proportion problems
- Make measurements

General Science
- Use scientific instruments

Life Science
- Investigate health issues

Oral Presentation
- Adapt presentation to specific audience

Interactive Communications
- Give/follow oral directions
- Communicate with clients/customers/ patients

Cognitive Activities
- Collect/record information
- Create a finished product

Job Acquisition/ Development
- Master specific job task/procedure
- Practice good work habits/attitudes

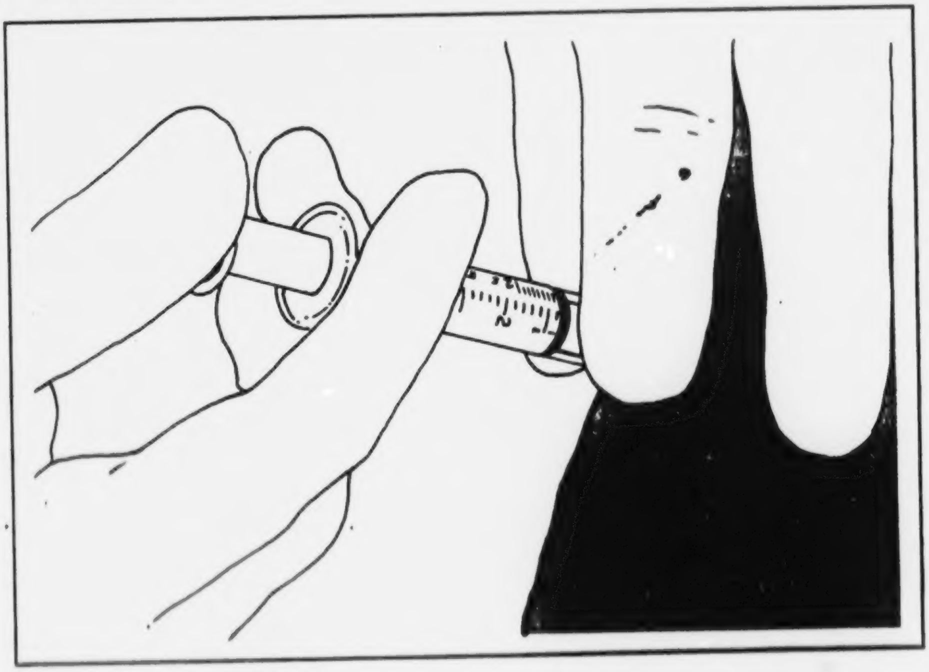
	Yes	No
24. With the bevel up (toward the patient's head), insert the needle quickly into the site at 90° angle. (Figure 1)		
25. Aspirate a small amount.		

⚠ **WARNING:** Air is expected. If blood appears, remove the needle immediately.

---

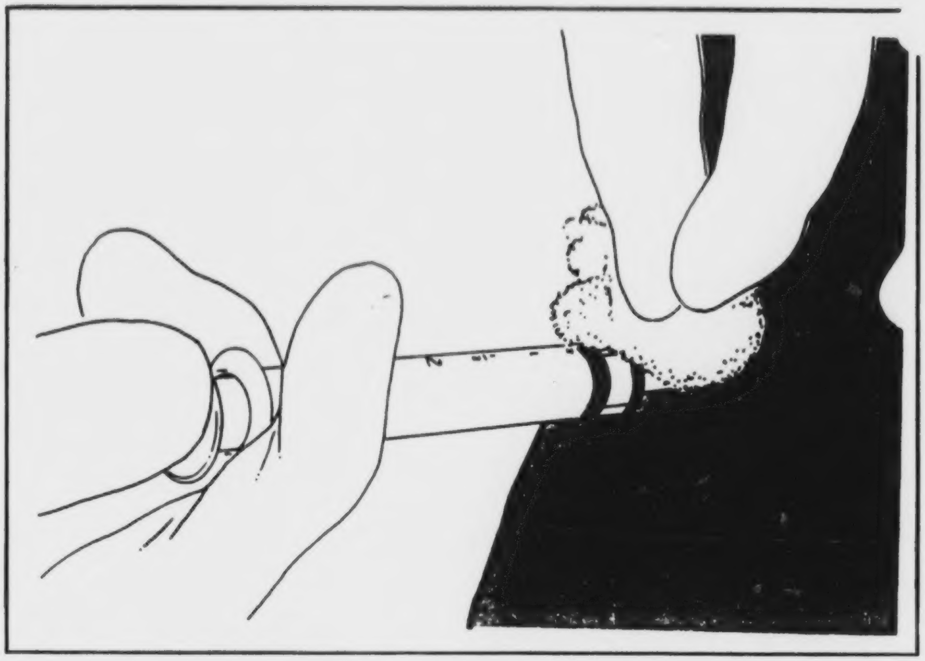
26. Slowly inject the total amount of medication. (Figure 1)		

FIGURE 1



27. Hold an alcohol sponge over the injection site and withdraw the needle. (Figure 2)		

FIGURE 2 Yes No



28. Gently massage the site. ______ ______

⚠ **WARNING**: Needlestick injury possible. Never recap a used needle.

---

29. Immediately dispose of the needle and syringe into a puncture-proof container. ______ ______

30. Leave the patient in a comfortable position. ______ ______

31. Wash your hands. ______ ______

Evaluation

32. Evaluate according to the five rights and, if appropriate to the drug, return in 30 minutes to check for desired effects and side effects. ______ ______

Documentation	Yes	No
33. Record accurately according to the policy of the facility. Include: a. name of medication b. dosage c. route d. time of administration e. signature f. unusual circumstances	_____	_____

SKILL TEST RECORD

EVALUATOR'S COMMENTS

____

____

____

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:

Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

JOB SHEET 16

ADMINISTERING MEDICATIONS

4

Name ______________________________

OBJECTIVE 33

Administer medication by z-track method.

EQUIPMENT AND SUPPLIES

- Alcohol swabs
- 3 cc syringes
- 1½" and 2" needles with gauges of 21-23
- Patient or mannequin with injectable areas
- Gloves
- Medication order
- Medication card/sheet
- Injectable IM medication

PROCEDURE

Assessment and Analysis	Yes	No
1. Assess the medication record to identify which medication is to be given to the individual patient.	____	____
2. Check the medications listed against the physician's orders.	____	____
3. Review information regarding the medications.	____	____
4. Assess the size and general build of the patient.	____	____
5. Assess your need for assistance.	____	____
6. Determine the appropriate needle and syringe to be used.	____	____
Planning		
7. Wash your hands.	____	____
8. Gather equipment. a. Obtain the medication ordered. b. Choose the appropriate syringe.	____	____

Research and Reference
- Select useful resources

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary
- Interpret abbreviations/ acronyms

Language
- Use standard grammar, spelling, and capitalization

Functional Writing
- Complete forms and records

c. Choose the appropriate needle. Yes No
d. Connect the syringe and needle.
e. Obtain alcohol swabs.
f. Have the correct medication card/sheet on the working area.

Implementation

9. Read the name of the medication to be given from the record. _____ _____

10. Check the label on the medication and take it from the shelf or drawer. _____ _____

11. Check the label again before drawing up medication. _____ _____

12. Draw up the ordered medication _____ _____
    a. Check the medication for the correct name.
    b. Calculate the correct dose.
    c. Check the medication for correct strength.
    d. Determine the correct time to give.
    e. Check the route of administration to be used.
    f. Draw the medication from the vial.
    g. Recheck the name of the medication prior to storage.
    h. Recalculate the dosage.

13. Place the syringe, needle, and alcohol swab on the tray. _____ _____

14. Place the patient medication card with the medication. (optional) _____ _____

15. Approach and identify the patient. _____ _____
    a. Read the patient's identification band.
    b. Verbalize or ask the patient's name for verification.

16. Instruct the patient on the medication and verify the appropriate site. _____ _____

17. Provide privacy. _____ _____

18. Wash your hands. _____ _____

19. Put on gloves. _____ _____

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals
- Convert units of measure

Math Application
- Select/apply mathematical formulae
- Use English and metric measures
- Solve ratio/proportion problems
- Make measurements

General Science
- Use scientific instruments

Life Science
- Investigate health issues

Oral Presentation
- Adapt presentation to specific audience

Interactive Communications
- Give/follow oral directions
- Communicate with clients/customers/patients

Cognitive Activities
- Collect/record information
- Create a finished product

Job Acquisition/ Development
- Master specific job task/procedure
- Practice good work habits/attitudes

	Yes	No
20. Choose the injection site.		
21. Pull the skin taut to the side over the injection site, moving it at least 1".		
22. Cleanse the site with the alcohol swab.		
23. Uncap the needle.		
24. With the bevel up (toward the patient's head), insert the needle quickly into the site at a 90° angle.		
25. Aspirate a small amount.		

WARNING: Air is expected. If blood appears, remove the needle immediately.

	Yes	No
26. Slowly inject the total amount of medication.		
27. Wait 10 seconds, then withdraw the needle quickly and release the skin over the area. Do not massage the site.		
28. Immediately dispose of the needle and syringe into a puncture-proof container.		

WARNING: Needlestick injury possible. Never recap a used needle.

	Yes	No
29. Wash your hands.		

Evaluation

	Yes	No
30. Evaluate according to the five rights and, if appropriate to the drug, return in 30 minutes to check for desired effects and side effects.		

Documentation	Yes	No
31. Record accurately according to the policy of the facility. Include: a. name of medication b. dosage c. route d. time of administration e. signature	_____	_____

SKILL TEST RECORD

EVALUATOR'S COMMENTS

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____

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PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:

Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

JOB SHEET 17

ADMINISTERING MEDICATIONS

4

Name ______________________________

OBJECTIVE 34

Administer an intradermal injection.

EQUIPMENT AND SUPPLIES

- Alcohol swabs
- 1 cc tuberculin syringes with ½" needles gauges 26-27
- Patient or mannequin with injectable areas
- Gloves
- Medication order
- Medication card/sheet
- Injectable intradermal medication

PROCEDURE

Research and Reference
- Select useful resources

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary
- Interpret abbreviations/acronyms

Language
- Use standard grammar, spelling, and capitalization

Functional Writing
- Complete forms and records

Assessment and Analysis Yes No

1. Assess the medication record to identify which medication is to be given to the individual patient. _____ _____
2. Check the medications listed against the physician's orders. _____ _____
3. Review information regarding the medications. _____ _____
4. Assess the size and general build of the patient. _____ _____
5. Assess your need for assistance. _____ _____
6. Determine the appropriate needle and syringe to be used. _____ _____

Planning

7. Wash your hands. _____ _____
8. Gather equipment. _____ _____
   a. Obtain the medication ordered.
   b. Choose the appropriate syringe.
   c. Choose the appropriate needle.

Yes No

d. Connect the syringe and needle.
e. Obtain alcohol swabs.
f. Have the correct medication card/sheet on the working area.

Implementation

9. Read the name of the medication to be given from the record. ____ ____

10. Check the label on the medication and take it from the shelf or drawer. ____ ____

11. Check the label again before drawing the medication. ____ ____

12. Draw up the ordered medication. ____ ____
    a. Check the medication for the correct name.
    b. Check the expiration date.
    c. Calculate the correct dose.
    d. Determine the correct time to give.
    e. Check the route of administration to be used.
    f. Draw the medication from the vial.
    g. Recheck the name of the medication prior to storage.
    h. Replace the correct medication into the correct area.

13. Re-examine the vial or ampule to check the label a third time and recalculate the dosage. ____ ____

14. Place the syringe, needle, and alcohol swab on the tray. ____ ____

15. Place the patient medication card with the medication. (optional) ____ ____

16. Approach and identify the patient. ____ ____
    a. Read the patient's identification band.
    b. Verbalize or ask the patient's name for verification.

17. Instruct the patient on the medication and verify the appropriate site. ____ ____

18. Provide privacy. ____ ____

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals
- Convert units of measure

Math Application
- Select/apply mathematical formulae
- Use English and metric measures
- Solve ratio/proportion problems
- Make measurements

General Science
- Use scientific instruments

Life Science
- Investigate health issues

Oral Presentation
- Adapt presentation to specific audience

Interactive Communications
- Give/follow oral directions
- Communicate with clients/customers/patients

Cognitive Activities

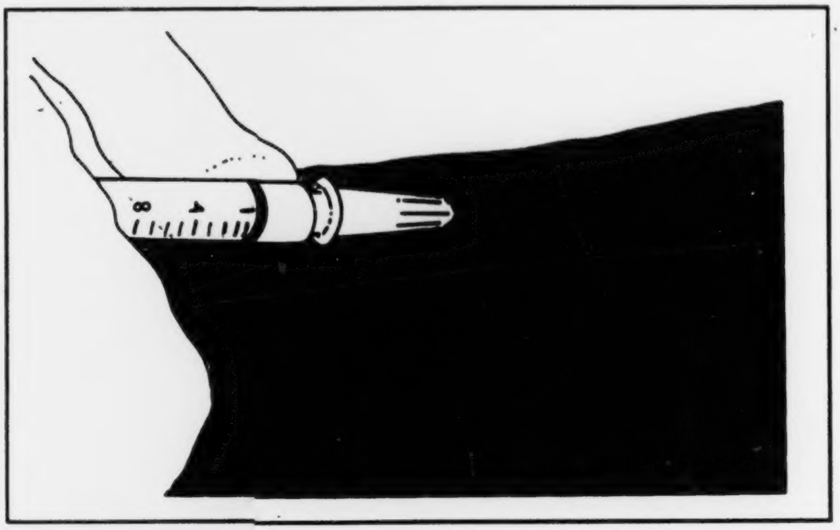
- Collect/record information
- Create a finished product

Job Acquisition/ Development

- Master specific job task/procedure
- Practice good work habits/attitudes

	Yes	No
19. Wash your hands.	____	____
20. Put on gloves.	____	____
21. Choose the injection site.	____	____
22. Pull the skin taut over the site.	____	____
23. Cleanse the site with alcohol swab.	____	____
24. Uncap the needle.	____	____
25. With the bevel up (toward the patient's head), insert the needle quickly into the site at 15° angle. (Figure 1)	____	____

FIGURE 1



	Yes	No
26. Lift the skin slightly with the needle.	____	____
27. Inject the total amount of medication.	____	____
28. Watch for bleb formation.	____	____
29. Withdraw the needle.	____	____
30. Immediately dispose of the needle and syringe into a puncture-proof container.	____	____

	Yes	No
⚠ **WARNING**: Needlestick injury possible. Never recap a used needle.		
31. Mark the location, date and exact time of the injection.		
32. Leave the patient in a comfortable position.	____	____
33. Wash your hands.	____	____
Evaluation		
34. Evaluate for redness and swelling.	____	____
Documentation		
35. Record accurately according to the policy of the facility. Include: a. name of medication b. dosage c. route d. time of administration e. signature f. unusual circumstances	____ ____	____ ____

SKILL TEST RECORD

EVALUATOR'S COMMENTS

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PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

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JOB
SHEET 18

ADMINISTERING MEDICATIONS

4

Name ______________________________

OBJECTIVE 35

Combine medications for injection.

EQUIPMENT AND SUPPLIES

- Syringe or syringe-needle units
- Needles of appropriate length and gauge
- Alcohol swabs
- Two medication vials
- Medication orders
- Medication card/sheet
- Medication cart
- Medication tray

PROCEDURE

Assessment and Analysis	Yes	No
1. Obtain the physician's orders for combined medication.	____	____
2. Check the labels with the orders.	____	____
3. Determine the compatibility of the two medications.	____	____
4. Determine the amount of each medication.	____	____
5. Calculate the total amount of the injection.	____	____
6. Determine the appropriate needle and syringe to be used.	____	____
Planning		
7. Wash your hands.	____	____
8. Obtain equipment.	____	____

Research and Reference
- Select useful resources

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary
- Interpret abbreviations/ acronyms

Language
- Use standard grammar, spelling and capitalization

Functional Writing
- Complete forms and records

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals
- Convert units of measure

Math Application
- Select/apply mathematical formulae
- Use English and metric measures
- Solve ratio/proportion problems

Functional Math
- Make measurements

General Science
- Use scientific instruments

Life Science
- Investigate health issues

Cognitive Activities
- Collect/record information
- Create a finished product

Job Acquisition/Development
- Master specific job task/procedure
- Practice good work habits/attitudes

Implementation	Yes	No
9. Cleanse the top of each medication vial with an alcohol swab.		
10. Pull back the plunger to the amount of the first medication to be drawn.		
11. Uncap the needle and insert into the vial of the first medication.		
12. Inject the air into the vial.		
13. Invert the vial and withdraw the desired amount of medication.		
14. Compare the label for the correct medication.		
15. Withdraw the needle.		
16. Compare the label for the correct second medication.		
17. While maintaining a hold on the plunger, insert the needle into the vial of the second medication. Do not inject air at this point.		
18. Compare the label for the correct medication.		
19. Slowly withdraw the correct amount of the second medication.		
20. Withdraw needle from vial.		
21. Place the cap on the needle.		
22. Place the syringe-needle unit on the medication tray.		

SKILL TEST RECORD

EVALUATOR'S COMMENTS

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:

Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.

3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.

2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.

1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

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426

JOB SHEET 19

ADMINISTERING MEDICATIONS

Name ____________________

OBJECTIVE 36 **Prepare an injection from dry medication using diluent.**

EQUIPMENT AND SUPPLIES

- Syringe
- Diluent (See label for appropriate diluent)
- Dry medication
- Two medication vials
- Medication tray
- Medication cart
- Medication orders
- Alcohol swabs

PROCEDURE

	Yes	No
Assessment and Analysis		
1. Read the label and determine the type of diluent, quantity of diluent, and resulting strength of solution.	____	____
2. Wash your hands.	____	____
3. Calculate the amount of medication to be drawn.	____	____
Planning		
4. Prepare equipment.	____	____
5. Obtain the dry medication.	____	____
6. Read the directions for diluent on the label and/or product insert.	____	____
7. Cleanse the top of the dry medication vial.	____	____
Implementation		
8. Draw the correct amount of diluent from the vial.	____	____

Research and Reference
- Select useful resources

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary
- Interpret abbreviations/acronyms

Language
- Use standard grammar, spelling and capitalization

Functional Writing
- Complete forms and records

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals
- Convert units of measure

Math Application
- Select/apply mathematical formulae
- Use English and metric measures
- Solve ratio/ proportion problems

Functional Math
- Make measurements

General Science
- Use scientific instruments

Life Science
- Investigate health issues

Cognitive Activities
- Collect/record information
- Create a finished product

Job Acquisition/ Development
- Master specific job task/procedure
- Practice good work habits/attitudes

	Yes	No
9. Tap the dry medication vial to break up the powder.	______	______
10. Insert the needle into the dry medication vial.	______	______
11. Inject diluent into the dry medication.	______	______
12. Mix the medication thoroughly.	______	______
13. Compare the labels for the correct medication.	______	______
14. Withdraw the desired dose of the medication.	______	______
15. Withdraw the needle from the dry medication vial.	______	______
16. Cap the needle.	______	______
17. Change needles.	______	______
18. Compare the label for the correct medication.	______	______
19. Place the prepared injection on the medication tray.	______	______

SKILL TEST RECORD

EVALUATOR'S COMMENTS

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

JOB SHEET 20

ADMINISTERING MEDICATIONS

4

Name ______________________________

OBJECTIVE 37

Administer a rectal suppository.

EQUIPMENT AND SUPPLIES

- Rectal suppository
- Water soluble lubricant
- Medicine cup
- Glove
- Medication order
- Medication card/sheet
- Medication cart or cabinet
- Patient or mannequin

PROCEDURE

Research and Reference
- Select useful resources

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary
- Interpret abbreviations/ acronyms

Language
- Use standard grammar, spelling, and capitalization

Functional Writing
- Complete forms and records

Assessment and Analysis	Yes	No
1. Assess the medication record to identify which medication is to be given to the individual patient.	_____	_____
2. Verify the medication order for rectal suppository. a. Read the doctor's order sheet. b. Read the medication card/sheet.	_____	_____
3. Check the medications listed against the physician's orders.	_____	_____
4. Check the 5 rights of medication administration. a. Check the patient name. b. Check the name of the medication. c. Check the dosage of the medication. d. Check the route of medication. e. Check the date and time for the medication.	_____	_____
Planning		
5. Select and prepare equipment.	_____	_____

Yes No

6. Wash your hands. ______ ______

Implementation

7. Verify the medication 3 times during preparation. ______ ______
   a. Check when taking the medication from the shelf or drawer.
   b. Check when placing the suppository in the cup.
   c. Check when returning the remainder to the shelf or drawer.

8. Identify the patient before giving the medication. ______ ______
   a. Read the identification band.
   b. Verbalize or ask the patient's name for verification.

9. Provide for patient privacy. ______ ______

10. Instruct the patient on the medication. ______ ______
    a. State the purpose of the medication.
    b. State correct placement of the medication.
    c. Check for patient questions.

11. Ask the patient to defecate if possible. ______ ______

12. Instruct the patient to turn on the left side with the upper leg bent toward the waist (Sims' position). ______ ______

13. Drape the patient to avoid exposure. ______ ______

14. Wash your hands. ______ ______

15. Put on glove. ______ ______

16. Remove the suppository from the package. ______ ______

17. Apply lubricant or cold water to the tip of the suppository. ______ ______

18. Place the suppository at the anal opening. ______ ______

______ ______

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals

Life Science
- Investigate health issues

Oral Presentation
- Adapt presentation to specific audience

Interactive Communications
- Give/follow oral directions
- Communicate with clients/customers/patients

Cognitive Activities
- Collect/record information
- Create a finished product

Job Acquisition/ Development
- Master specific job task/procedure
- Practice good work habits/attitudes

	Yes	No
19. Instruct the patient to take a deep breath.	____	____
20. Gently insert the suppository to 1 inch above the internal sphincter.	____	____
21. Instruct the patient to remain in position for 20 minutes.	____	____
22. Remove glove, keeping the outside turned in, and discard materials.	____	____
23. Wash your hands.	____	____
Evaluation		
24. Evaluate according to five rights and if appropriate to the drug, return in 30 minutes to check for desired effects and side effects.	____	____
Documentation		
25. Document administration of rectal suppository. a. name of medication b. dosage c. route d. time of administration e. signature f. document instruction g. document the effects of the medication	____	____

SKILL TEST RECORD

EVALUATOR'S COMMENTS

____

____

____

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

JOB SHEET 21

ADMINISTERING MEDICATIONS

4

Name ______________________________

OBJECTIVE 38

Administer a vaginal suppository.

EQUIPMENT AND SUPPLIES

- Vaginal suppository
- Vaginal applicator (as indicated)
- Perineal pad
- Water soluble lubricant
- Gloves
- Paper towel
- Medication order
- Medication card/sheet
- Medication cart
- Patient or mannequin

PROCEDURE

Research and Reference
- Select useful resources

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary
- Interpret abbreviations/acronyms

Assessment and Analysis Yes No

1. Assess the medication record to identify which medication is to be given to the individual patient. ____ ____
2. Verify the medication order for the vaginal suppository. ____ ____
    a. Read the doctor's order sheet.
    b. Read the medication card/sheet.
3. Check the medications listed against the physician's orders. ____ ____
4. Check the 5 rights of medication administration. ____ ____
    a. Check the patient name.
    b. Check the name of the medication.
    c. Check the dosage of the medication.
    d. Check the route of medication.
    e. Check the date and time for the medication.

Language
- Use standard grammar, spelling, and capitalization

Functional Writing
- Complete forms and records

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals

Life Science
- Investigate health issues

Oral Presentation
- Adapt presentation to specific audience

Interactive Communications
- Give/follow oral directions
- Communicate with clients/customers/patients

Planning	Yes	No
5. Select and prepare equipment.	_____	_____
6. Wash your hands.	_____	_____
Implementation		
7. Verify the medication 3 times during preparation. a. Check when taking the medication from the shelf or drawer. b. Check when placing the suppository in the cup. c. Check when returning the remainder to the shelf or drawer.	_____	_____
8. Identify the patient before giving the medication. a. Read the identification band. b. Verbalize or ask the patient's name for verification.	_____	_____
9. Provide for patient privacy.	_____	_____
10. Instruct the patient on the medication. a. State the purpose of the medication. b. State correct placement of the medication. c. Check for patient questions.	_____	_____
11. Ask the patient to void if possible.	_____	_____
12. Instruct the patient to lay on her back her knees bent and slightly separated. (Use dorsal recumbent position with knees flexed or Sims' position.)	_____	_____
13. Drape the patient to avoid exposure.	_____	_____
14. Place the perineal pad beneath the patient.	_____	_____
15. Wash your hands.	_____	_____
16. Put on gloves.	_____	_____
17. Remove the suppository from the package.	_____	_____

Cognitive Activities
- Collect/record information
- Create a finished product

Job Acquisition/ Development
- Master specific job task/procedure
- Practice good work habits/attitudes

	Yes	No
18. Apply lubricant to the tip of the suppository unless contraindicated.	______	______
19. Separate the labia with your non-dominant hand.	______	______
20. Insert the suppository about 2 inches into the vagina.	______	______
21. Instruct the patient to remain in position for 10 minutes.	______	______
22. Wrap the applicator in a paper towel.	______	______
23. Remove the gloves, keeping the outside turned in.	______	______
24. Discard materials.	______	______
25. Wash your hands.	______	______
Evaluation		
26. Evaluate according to the five rights and, if appropriate to the drug, return in 30 minutes to check for desired effects and side effects.	______	______
Documentation		
27. Document administration of vaginal suppository. a. name of medication b. dosage c. route d. time of administration e. signature f. instruction g. effects of medication	______	______

SKILL TEST RECORD

EVALUATOR'S COMMENTS

____

____

____

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

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Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

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EVALUATOR'S COMMENTS

OBJECTIVE SHEET

ASSISTING WITH INTRAVENOUS THERAPY

5

INTRODUCTION

The administration of intravenous (IV) therapy is a complex, dependent intervention. The patient's safety depends on the cooperation of the entire health care team. The physician determines the type of fluid and administration rate, and the nursing staff administers the intravenous therapy and provides for safety and comfort of the patient. Your role as a practical nurse assisting with intravenous therapy will vary with each facility in regard to specific responsibilities for patient management. A sound knowledge base of this treatment is necessary to give safe bedside nursing care.

This unit will cover the basic information for maintaining an intravenous system and watching for effects of the medication. Most practical nurses will need additional training before assuming complete responsibility for administration of intravenous medications.

PREREQUISITE

"Calculating Medication Dosages," "Documenting Medications," "Identifying Classification and Effects of Medications," and "Administering Medications."

FOCUS ASSIGNMENTS

Reading Comprehension
- Gain factual information
- Analyze cause and effect
- Draw conclusions

Language
- Use standard grammar spelling, and capitalization
- State ideas clearly

Composition
- Use complete sentences

FOCUS ASSIGNMENTS

PREREADING:	Read the Handout, "Infection Control." As you read, think about aspects intravenous therapy that are affected by infection control measures.
WRITING:	Write a short (1 paragraph to 1 page) explanation of how infection control affects nurses assisting with intravenous therapy.

UNIT OBJECTIVE

After completing this unit, you will show the following competencies by mastering the activities on the Assignment and Job Sheets and by scoring at least 85% on the Written Test.

SPECIFIC OBJECTIVES

1. Identify the general purposes for intravenous therapy.
2. Distinguish among the methods of medication administration using intravenous therapy.
3. Identify common sites for intravenous therapy.
4. Distinguish among the effects of isotonic, hypotonic, and hypertonic intravenous fluid.
5. Identify the advantages and disadvantages of intravenous therapy.
6. Discuss the steps of the nursing process as they relate to patients receiving IV therapy.
7. Give the formula to calculate the flow rate of IV fluids.
8. Calculate the flow rate of IV fluids. (Assignment Sheet 1)
9. Select appropriate guidelines for assisting with IV therapy.
10. Identify the purpose and risks of infusion pumps.
11. Apply the nursing process to care for patients receiving intravenous therapy. (Assignment Sheet 2)
12. Assess and document IV therapy. (Job Sheet 1)
13. Change peripheral IV tubing. (Job Sheet 2)
14. Change IV dressings. (Job Sheet 3)
15. Discontinue intravenous therapy. (Job Sheet 4)
16. Convert an IV to a heparinized lock and maintain. (Job Sheet 5)
17. Change an IV flow rate. (Job Sheet 6)
18. Change an IV container. (Job Sheet 7)

INFORMATION SHEET

ASSISTING WITH INTRAVENOUS THERAPY

5

OBJECTIVE 1

Optional Activities/ Resources in Instructor's Guide

Identify the general purposes for intravenous therapy.

- Administering medications directly into the vascular system
- Administering fluids directly into the vascular system

NOTE: Medications which are given by this route act the most rapidly of all parenteral routes and, when given correctly, cause less irritation. Fluid replacement is the most common purpose for continuous intravenous therapy.

OBJECTIVE 2

Required Activities/ Resources - transparency

Optional Activities/ Resources in Instructor's Guide

Distinguish among the methods of medication administration using intravenous therapy.

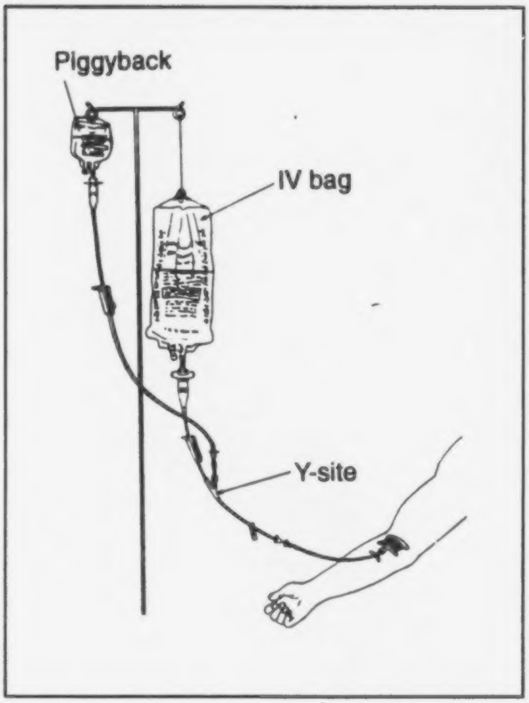
Your instructor will show a transparency of IV equipment.

WORDS YOU SHOULD KNOW

laminar flow hood	a device that uses a flow of filtered air to decrease the risk of contamination

- **Piggyback method** — The most common method of administering medication is by the use of a *piggyback*, or small bag of fluid to which medication has been added. This small bag is connected (piggybacked) into the main intravenous line. (Figure 1) Piggyback systems usually work by gravity. The piggyback bag is hung higher than the main intravenous bag, which causes the medication to run into the main line before the main intravenous fluid. A common use for this method is intravenous antibiotic therapy.

FIGURE 1



- **Add medication to main IV fluid** — Medication can be added directly into the main IV fluid. This provides for a continuous infusion of the medication. This method is used when the medication needs to be diluted in large amounts of fluid. Addition of the medication into the fluid is typically performed in the pharmacy under a laminar flow hood, which decreases the possibility of contamination. Electrolytes, such as potassium chloride (KCL), are commonly administered to the patient in this manner. More recently, morphine has been used as a continuous drip for treatment of severe pain.

- **Volume control set** — In a volume control set, the drip chamber is filled on a frequent basis (once every ½ - 2 hours) with the desired amount of fluid. Medication may be added to this fluid. Volume control sets are used to decrease the chance of fluid overload and allow for more accurate determination of intravenous intake. They are commonly used for intravenous therapy in children.

- **Intravenous push** — An intravenous push, also known as a *bolus*, is the introduction of a medication directly into the vein. Although rarely used, the vein may be punctured solely for the administration of this medication (such as when giving an injection of 50% dextrose in severe hypoglycemia). An IV push or bolus may also be given into an existing IV at an injection port closest to the IV cannula. This method may be used for emergency drugs, those which cannot be diluted, or when peak blood levels are desired quickly. However, this method is rarely used by PNs.

- **Infusion port** — One of the newer forms of administration of intravenous medication is the infusion port. Infusion ports are small devices which are implanted under the skin of the chest wall. The devices have a long catheter which delivers the medication into a large vessel or the right atrium. The surface of the device, which is placed directly beneath the skin, has a self-sealing rubber covering which can be punctured several times. Most infusion ports require special needles. These devices are useful in patients who receive chemotherapy or hyperalimentation in long term treatment.

OBJECTIVE 3

Required Activities/ Resources
- discussion

Identify common sites for intravenous therapy.

Start with the question "What are the advantages and disadvantages of each site?"

- arm
- back of hand
- forearm
- foot

OBJECTIVE 4

Required Activities/ Resources
- discussion

Optional Activities/ Resources in Instructor's Guide

Distinguish among the effects of isotonic, hypotonic, and hypertonic intravenous fluid.

Start with the questions "Which specific diagnoses and symptoms would require an IV solution?" and "What fluids can be used for diabetic patients?"

WORDS YOU SHOULD KNOW	
hypertonic	a solution that has a higher concentration of water molecules than plasma
hypotonic	a solution that has a lower concentration of water molecules than plasma
isotonic	a solution that has the same concentration of water molecules as plasma

- **isotonic** — adds fluid without affecting cells
- **hypertonic** — draws fluid from the cells into the bloodstream, causing cells to shrink
- **hypotonic** — draws fluid from the bloodstream into the cells, causing cells to swell

OBJECTIVE 5

Required Activities/ Resources - discussion

Optional Activities/ Resources in Instructor's Guide

Identify the advantages and disadvantages of intravenous therapy.

? Start with the questions "What are the advantages and disadvantages of medication and fluid therapy IVs?" and "What are the safety factors that must be considered?"

- Advantages
  - Provides an effective method for fluid replacement
  - Provides a route of medication administration
  - Provides for administration of medication and fluids to patients who may be unable to tolerate other forms.
- Disadvantages
  - Fluid overload
  - Tissue extravasation
  - Phlebitis
  - Infections
  - Severe allergic reactions

OBJECTIVE 6

Optional Activities/ Resources in Instructor's Guide

Discuss the steps of the nursing process as they relate to patients receiving IV therapy.

The nursing process in relation to intravenous therapy includes

- Assessment
  - age
  - vital signs
  - weight
  - general condition
  - catheter site
  - dressing
  - administration rate
  - equipment

- Analysis
  - indications of complications of fluid overload
  - infection at the insertion site of the catheter
  - any patient assessments that need to be reported to the charge nurse or physician
- Planning
  - equipment
  - pumps
  - containers
  - tubing
  - preparation for administering or maintaining intravenous therapy
  - facility policy and procedure
- Implementation
  - sterile technique
  - universal precautions
  - maintaining dressing site
  - maintaining function of equipment and flow rates
- Evaluation
  - effectiveness of intravenous therapy
  - required documentations associated with treatment

OBJECTIVE 7 **Give the formula to calculate the flow rate of IV fluids.**

To determine the rate of an IV, the nurse must know the total amount of fluid to be infused, the amount of time over which that amount is to be infused and the gtt/cc capacity of the tubing being used to deliver the fluid. The formula is:

$$\frac{\text{total amount of solution} \times \text{tubing drop factor}}{\text{hours to be infused} \times \text{60 minutes}} = \text{gtt/min}$$

EXAMPLE: A physician orders 1000 cc of 0.9% NaCl to run over 12 hours. The administration set delivers 10 gtt/min.

$$\frac{1000\text{ cc} \times 10\text{ gtt}}{12\text{ hr} \times 60\text{ min}} = \frac{10000\text{ gtt}}{720\text{ min}} = 13.8 \text{ or } 14\text{ gtt/min}$$

This solution should be given at 14 gtt/min.

OBJECTIVE 8 **Complete Assignment Sheet 1.**

OBJECTIVE 9

Required Activities/ Resources
- discussion

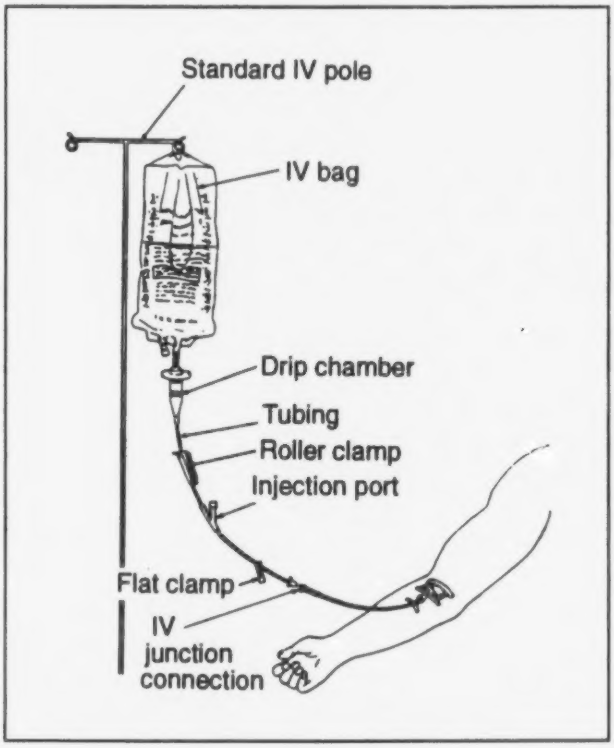
Select appropriate guidelines for assisting with IV therapy.

Start with the question "What is the nursing process that results from IV therapy on nursing care plans?"

WORDS YOU SHOULD KNOW	
heparin lock (heparinized lock)	a device that is filled with heparin solution and attached to an intravenous catheter which remains in the patient's vein, preventing coagulation and eliminating the need for repeated punctures

- Assessment
  - ☐ Equipment (Figure 2)

FIGURE 2


Standard IV pole
IV bag
Drip chamber
Tubing
Roller clamp
Injection port
Flat clamp
IV junction connection

- solution container
  a. correct fluid
  b. sufficient fluid
  c. accurate time tape
  d. assess for leaks

- pump or controller
  a. plugged in
  b. turned on
  c. registering drips correctly
  d. correct drop rate
  e. alarm turned on

☑ **NOTE:** When responding to an alarm, start with the most common cause for this alarm to go off.

- tubing
  a. drip chamber contains a moderate level of fluid
  b. drips fall freely into the tubing
  c. no air enters between drips
  d. free of obstacles, leaks, and kinks
  e. no air in the tubing (if air is noted, find the source)
  f. no separation of the tubing connections
  g. no leaks in ports

☐ Site
- connection between the tubing and the IV cannula
- tape
- dressings

☐ Patient
- Inspect the site for redness and edema.
- Check for positional site (flow rate varies drastically with changes in patient position).
- Ask if the patient feels any discomfort (tightness, burning, pain).
- Assess the vein above the site for any redness, hardness or increased temperature (signs of phlebitis).
- Assess for coolness and edema (signs of infiltration).
- Assess for general symptoms.
  a. changes in blood pressure
  b. neck vein distention
  c. rapid breathing
  d. shortness of breath
  e. generalized rash and itching
  f. increased temperature
  g. nausea and vomiting
  h. backache
  i. general malaise

- Regulation
    - ☐ Observe the drip chamber of the IV tubing and count using a watch with a second hand.
        - ▸ Count for a full minute and double-check for accuracy.
        - ▸ Double-check the rate of pumps and controllers according to the manufacturer's recommendations.
        - ▸ Make adjustments by tightening and loosening the roller device on the tubing.

          ☞ **NOTE:** Other clamps on the tubing allow for shutting off or opening the flow. These should not be used for flow regulation.

    - ☐ Check factors which may change the rate of flow.
        - ▸ fluid level (full containers flow faster than almost empty ones)
        - ▸ height at which bag is hung (the higher the container, the greater the pressure, causing faster flow)
        - ▸ drip chamber level (should be just over half full)
        - ▸ kinks or pressure on the tubing
        - ▸ tubing hanging below the patient; insufficient pressure to counteract gravity
        - ▸ clamps not kept open
        - ▸ air bubbles in the lines
        - ▸ obstructions

- Documentation
    - ☐ Document the amount that the patient has actually received and all assessment information.

      ☞ **NOTE:** If the IV is being administered for fluid replacement, assess for hydration status.

    - ☐ Document IV intake at least once per shift for all patients receiving IV fluid, including intermittent forms of fluid.

      ☞ **NOTE:** On initial assessment of the patient, determine the amount of IV fluid remaining from the last shift. If it is not within the prescribed rate, notify the charge nurse and adjust the flow rate as necessary to obtain the prescribed rate of flow.

    - ☐ Record any fluids hung during your shift.
    - ☐ At the end of your shift, calculate the total amount of fluids the patient has received.

  - Document the amount remaining in the bottle for the next shift.

- Changing tubing
  - Intravenous tubing should be changed every 24 hours or according to facility policy. The tubing is usually changed along with the bag of fluid.
  - A single container of intravenous solution should not run for more than 24 hours.
  - Separate the tubing only when you are changing it.
  - Before actually changing the tubing, think through the task and plan the steps you will follow to minimize the risk of contaminating the IV.
  - Work quickly to maintain the sterility of the ends of the tubing.

- Changing IV dressings

  ☑ **NOTE:** There is some controversy over the use of dressings on the IV site. Many facilities use a sterile gauze pad with an antibiotic ointment, which does not allow for visualization of the actual IV site between dressing changes. Some facilities have chosen to use a sterile transparent dressing on IV sites. Regardless of the material used, the purpose is to decrease chances of contamination and infection at the venipuncture site.

  - Change dressings every 24 hours.
  - Stabilize the catheter hub.
  - If using gauze, tape should be secure but not restrict circulation or fluid flow in the area. Tape should never encircle the arm.
  - As with any procedure that uses tape, make sure the patient is not allergic to the tape being used.

- Changing IV containers

  ☑ **NOTE:** Many intravenous fluids run continuously and require changes in the containers when empty. Changes in IV containers are also necessary with intermittent infusions.

  - Insert the spike into the new bag of fluid after hanging the bag from the IV pole. Bottles should be spiked with the bottle placed on a firm surface.
  - Assess new bottles for vacuum (loss of vacuum means the bottle has been contaminated.) If an unvented bottle is being used, the tubing must have an air vent.
  - Label the fluid with the date and time of initiation. Write on a strip of tape, not directly on the bag. Many facilities require marking the container using tape or other device to quickly determine the proper level at intervals such as every hour.
- Converting an IV to a heparin lock
  - Flush the heparin lock with dilute heparin solution both **before** and **after** administration. Use heparin flush solution only — do **not** use regular dilutions of heparin.
  - The technique for converting an IV to a heparin lock is similar to changing tubing; the heparin lock device functions as the new tubing.
  - Prime the device with heparin solution before attaching it to the catheter hub.
  - After the connection is secure, aspirate for blood using a syringe with heparin solution in it to determine if the catheter remains in the vein.
  - The amount of heparin solution used to seal the device varies with each manufacturer. Be aware of the requirements of the specific equipment and the facility policy before using a heparin lock.
- Discontinuing an intravenous infusion
  - Always wear gloves.
  - A tourniquet may be placed above the site according to facility policy.
  - After removing the catheter, inspect the tip to determine that it is intact.

OBJECTIVE 10

Identify the purpose and risks of infusion pumps.

Required
Activities/
Resources
- demonstration

Your instructor will demonstrate the use of controllers and pumps.

Optional Activities/ Resources in Instructor's Guide

- Purpose
  - ☐ Provide a constant surveillance of the intravenous infusion
    - ▸ Rate of flow of the infusion
    - ▸ Presence of air or obstructions
    - ▸ Sufficient fluid in the tubing
  - ☐ Sound an alarm when any deviation from normal is detected
- Risks
  - ☐ Staff may fail to plug the controller in after ambulation of a patient.

    ☑ **NOTE:** The controller can usually run on battery power, but you should reconnect to a stable power source to prevent loss of power from a low battery. Even with the IV pump or controller, you are still responsible for frequent checks on the IV.
  - ☐ An infusion pump may not detect irregular situations such as infiltration, in which there is no blockage of the fluid's flow.
  - ☐ An infusion pump may act to pump in the reverse direction if set up improperly, pumping fluid from the patient into the container.

ASSIGNMENT SHEET 1

ASSISTING WITH INTRAVENOUS THERAPY

5

Name ______________________________ Score __________

OBJECTIVE 8

Calculate the flow rate of IV fluids.

INSTRUCTIONS

Calculate the rate of flow for the following orders. Your instructor may ask you to show your work.

Reading Comprehension
- Recognize stereotyping and bias

Functional Reading
- Use content area vocabulary
- Interpret abbreviations/acronyms

Operation and Calculation
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals
- Perform metric calculations

Math Application
- Solve word problems
- Select/apply mathematical formulae

Data Analysis and Display
- Apply sampling techniques

	Order	**Rate of flow**
1.	500 cc to run over 6 hours. Set delivers 15 gtt/cc.	__________
2.	1000 cc to run over 8 hours. Set delivers 10 gtt/cc.	__________
3.	150 cc to run over 1 hour. Set delivers 60 gtt/cc.	__________
4.	3000 cc to run over 24 hours. Set delivers 20 gtt/cc.	__________

5. Your patient has 1000 cc of D5W ordered to run every 8 hours. Her infusion pump is infusing the fluid accurately and she is receiving no other IV fluids. The last 8-hour shift left 750 cc remaining. This was verified on assessment. What amount do you expect to leave at the end of your shift?__________

6. Your patient has an IV at a keep-open rate of 20cc per hour. He also receives one 150 cc infusion of antibiotics during each shift. The documented amount left from the previous 8-hour shift was 300 cc from a 500 cc bag. This was checked and verified.

   a. If hospital policy requires infusion of regular fluids to be maintained at a prescribed rate regardless of additional fluids, how much should be left to count for the next shift?________

Cognitive Activities
- Create a finished product

Job Acquisition/ Development
- Master specific job task/ procedure

b. What is the patient's total IV fluid intake during your shift?________

c. If hospital policy allowed the flow rate to be replaced for 1 hour for each piggyback or intermittent IV medication, how much should be left to count for the next shift?___________

d. For the situation in question 6c, what is the patient's total IV fluid intake during your shift?__________

ASSIGNMENT SHEET 2

ASSISTING WITH INTRAVENOUS THERAPY

5

Name ______________________________ Score __________

OBJECTIVE 11

Apply the nursing process to care for patients receiving intravenous therapy.

INSTRUCTIONS

Functional Reading
- Use content area vocabulary

Language
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Cognitive Activities
- Collect/record information
- Identify critical elements/issues
- Devise a solution
- Create a finished product
- Transfer knowledge/ training to new situations

Read the following situations and determine ways to help these patients.

1. Your patient is receiving intravenous fluids for dehydration. She is confused and agitated. She has pulled out one IV and has just had another IV started. What are some precautions that may be helpful in maintaining the IV?

2. Your patient's fractured right arm is in a cast. His IV has been placed in the antecubital fossa (the bend of the elbow) of his left arm. What are measures that may be necessary to maintain the IV and the basic care of this patient?

3. Your patient is 58 years old and is usually mobile. She has had several IVs. She now has an IV in her left foot. What measures could you implement that would help her maintain maximum independent function?

4. Your patient is an infant who has an IV placed in a scalp vein. What are some devices which may be used to maintain the site?

JOB
SHEET 1

ASSISTING WITH INTRAVENOUS THERAPY

5

Name ______________________________

OBJECTIVE 12

Assess and document intravenous therapy.

EQUIPMENT AND SUPPLIES

- IV fluid
- IV controller (optional)
- IV tubing
- IV catheter
- Gloves
- Patient or mannequin
- Nurse's notes or appropriate checklist

PROCEDURE

Assessment and Analysis	Yes	No
1. Check the physician's order for IV.	____	____
2. Calculate the rate of flow for the prescribed rate and double check your answer.	____	____
Planning		
3. Wash your hands.	____	____
4. Put on gloves.	____	____
5. Gather equipment.	____	____
Implementation		
6. Identify the patient: a. Check the patient's ID band. b. Ask the patient's name.	____	____
7. Check the equipment: a. Check that the solution is the correct type. b. Check the solution level. c. Check the time tape; replace if needed.	____	____

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary

Language
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Functional Writing
- Complete forms and records

456

Operation and Calculation
- Use exponential notations
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals

Math Application
- Select/apply mathematical formulae

Functional Math
- Solve practical problems

Life Science
- Investigate health issues

Interactive Communications
- Apply questioning techniques
- Communicate with clients/ customers/ patients

Cognitive Activities
- Collect/record information
- Identify critical elements/issues
- Create a finished product

d. Check the bag/bottle for leaks.
e. Check that the controller is plugged into an outlet and functioning correctly.
f. Check that alarms are turned on.
g. Check that drops are registering correctly.
h. Check that the level of fluid in the drip chamber is correct.
i. Check that the drip rate is correct.
j. Check for air in tubing.
k. Check that the tubing is free of kinks and obstructions; release if found.
l. Check tubing ports for leaks.
m. Check tubing connections for security.

Evaluation

8. Inspect the site: ______ ______
   a. Check the connection of the tubing and cannula for tightness.
   b. Check that the tape is dry and secure.
   c. Check that dressing is dry (if used).
   d. Check for positional flow.
   e. Apply armboard if needed.
   f. Assess for local redness or edema at the site.
   g. Assess the area above the site for redness, hardness and/or warmth.
   h. Ask the patient how the site feels.

9. Assess the patient for generalized complaints. ______ ______

Documentation

10. Document assessment of ______ ______
    a. type of fluid
    b. flow rate
    c. equipment
    d. appearance of the site and the surrounding area
    e. complaints of the patient

Job Acquisition/ Development
- Master specific job task/ procedure
- Practice good work habits/ attitudes

SKILL TEST RECORD

EVALUATOR'S COMMENTS

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

JOB SHEET 2

ASSISTING WITH INTRAVENOUS THERAPY

5

Name ____________________________________

OBJECTIVE 13

Change peripheral IV tubing.

EQUIPMENT AND SUPPLIES

- IV administration set
- IV fluid
- IV pole
- Sterile 2 x 2 gauze pad
- Gloves
- Sample chart

PROCEDURE

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary

Language
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Functional Writing
- Complete forms and records

	Yes	No
Assessment and Analysis		
1. Verify the order for IV fluid and rate of administration.	_____	_____
2. Calculate the rate of flow and double check your answer.	_____	_____
Planning		
3. Wash your hands.	_____	_____
4. Gather equipment.	_____	_____
Implementation		
5. Identify the patient: a. Check the patient's ID band. b. Ask the patient's name.	_____	_____
6. Explain the procedure to the patient.	_____	_____
7. Prime the IV infusion set:	_____	_____

- When using new IV fluid :
  a. Hang the fluid from the IV pole.
  b. Check that the tubing clamp is closed.

Operation and Calculation
- Use exponential notations
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals

Math Application
- Select/apply mathematical formulae

Functional Math
- Solve practical problems

Life Science
- Investigate health issues

Interactive Communications
- Apply questioning techniques
- Communicate with clients/ customers/ patients

Cognitive Activities
- Collect/record information
- Identify critical elements/issues
- Create a finished product

c. Loosen the clamp.
d. Prime the drip chamber, filters, and tubing according to manufacturer's directions.

- When using IV fluid that is already hanging:
  a. Slow the flow rate to keep-open rate.
  b. Invert the fluid container and replace the old spike with the spike on the new tubing.
  c. Maintain the drip chamber above the level of the heart.
  d. prime the drip chamber and filters according to the manufacturer's directions.
  e. Prime the remainder of the tubing, eliminating all air pockets.

8. Put on gloves. _____ _____

9. Place a sterile 2 x 2 under the catheter hub. _____ _____

10. Stabilize the catheter hub. _____ _____

11. Disconnect the catheter hub from the old tubing. _____ _____

12. Connect the catheter hub to the new tubing. _____ _____

13. Open the clamp on the tubing for a slow infusion rate. _____ _____

14. Wash your hands. _____ _____

15. Label the IV fluid and tubing. _____ _____

Evaluation

16. Check the infusion and site: _____ _____
    a. No complaints of pain, burning or discomfort at site
    b. Infusion flows easily
    c. No local swelling is noted

Job Acquisition/ Development
- Master specific job task/ procedure
- Practice good work habits/ attitudes

d. If all normal, continue; if not, problem-solve for cause and correct; if unable to correct, refer to facility policy regarding IVs. ______ ______

17. Set the rate of flow to the prescribed rate. ______ ______

18. Check equipment for proper functioning. ______ ______

19. Discard equipment and gloves. ______ ______

Documentation

20. Document the procedure.

SKILL TEST RECORD

EVALUATOR'S COMMENTS

____

____

____

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1

Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

____

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JOB SHEET 3 ASSISTING WITH INTRAVENOUS THERAPY

Name ________________________________

OBJECTIVE 14 **Change IV dressings.**

EQUIPMENT AND SUPPLIES

- Gloves
- Gauze 2 x 2, antibiotic ointment, tape
  OR
- Sterile transparent adhesive
- Dressing
- IV administration set
- IV catheter
- Patient or mannequin
- Sample chart

PROCEDURE

__Functional Reading__
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary

__Language__
- Use standard grammar, spelling, and capitalization
- State ideas clearly

__Functional Writing__
- Complete forms and records

Assessment and Analysis	Yes	No
1. Verify that it is the correct time to change the dressing.	____	____
☑ **NOTE:** This nursing procedure does not require a physician's order.		
Planning		
2. Wash your hands.	____	____
3. Assemble equipment.	____	____
Implementation		
4. Identify the patient: a. Check the patient's ID band. b. Ask the patient's name.	____	____
5. Explain the procedure to the patient.	____	____
6. Put on gloves.	____	____
7. Stabilize the intravenous catheter hub.	____	____

8. Remove the old dressing and tape carefully. _____ _____

9. Assess the venipuncture site. _____ _____

10. Place the new dressing (with ointment specified by facility policy) directly on the venipuncture site. _____ _____

11. Tape the dressing securely or secure transparent dressing on all sides. _____ _____

Evaluation

12. Discard equipment. _____ _____

13. Wash your hands. _____ _____

14. Observe for correct rate of flow of intravenous fluid. _____ _____

Documentation

15. Document the procedure. _____ _____

Life Science
- Investigate health issues

Interactive Communications
- Apply questioning techniques
- Communicate with clients/ customers/ patients

Cognitive Activities
- Collect/record information
- Identify critical elements/issues
- Create a finished product

Job Acquisition/ Development
- Master specific job task/ procedure
- Practice good work habits/ attitudes

SKILL TEST RECORD

EVALUATOR'S COMMENTS

____

____

____

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

JOB SHEET 4

ASSISTING WITH INTRAVENOUS THERAPY

5

Name ____________________

OBJECTIVE 15 **Discontinue intravenous therapy.**

EQUIPMENT AND SUPPLIES

- Gloves
- Tourniquet
- Sterile gauze sponges
- Adhesive dressing
- IV set-up
- Patient or mannequin

PROCEDURE

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary

Language
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Functional Writing
- Complete forms and records

Assessment and Analysis	Yes	No
1. Check the physician's order for discontinuing the IV.	____	____
Planning		
2. Wash your hands.	____	____
3. Set up the equipment.	____	____
Implementation		
4. Identify the patient. a. Check the patient's ID band. b. Ask the patient's name.	____	____
5. Explain the procedure to the patient.	____	____
6. Clamp the IV.	____	____
7. Place the tourniquet above the site according to facility policy.	____	____
8. Put on gloves.	____	____
9. Stabilize the needle.	____	____
10. Loosen and remove the tape.	____	____

Life Science
- Investigate health issues

Interactive Communications
- Apply questioning techniques
- Communicate with clients/ customers/ patients

Cognitive Activities
- Collect/record information
- Identify critical elements/issues
- Create a finished product

Job Acquisition/ Development
- Master specific job task/ procedure
- Practice good work habits/ attitudes

11. Place the sterile gauze pad over the venipuncture site. ______ ______

12. Hold the patient's arm and the gauze pad with your non-dominant hand. ______ ______

13. Remove the needle with your dominant hand. ______ ______

14. Inspect the tip of the needle. ______ ______
    a. If the tip is intact, remove the tourniquet.
    b. If the tip is not intact, tighten the tourniquet and call for help.

15. Apply pressure to stop bleeding. ______ ______

16. Apply adhesive dressing. ______ ______

17. Dispose of the catheter in a puncture-proof container. ______ ______

18. Dispose of all equipment. ______ ______

19. Remove and dispose of gloves. ______ ______

20. Wash your hands. ______ ______

Evaluation

21. Check the patient for comfort. ______ ______

Documentation

22. Document the procedure. ______ ______

SKILL TEST RECORD

EVALUATOR'S COMMENTS

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

471

JOB
SHEET 5

ASSISTING WITH INTRAVENOUS THERAPY

5

Name ____________________________________

OBJECTIVE 16

Convert an IV to a heparinized lock and maintain.

EQUIPMENT AND SUPPLIES

- IV administration set
- IV catheter in patient or mannequin
- Syringe
- Heparin solution
- Alcohol swab
- Tape
- Gloves
- Sample chart

PROCEDURE

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary

Language
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Functional Writing
- Complete forms and records

	Yes	No
Assessment and Analysis		
1. Verify the order to change the IV to a heparin lock device.	_____	_____
Planning		
2. Wash your hands.	_____	_____
3. Assemble equipment.	_____	_____
Implementation		
4. Identify the patient: a. Check the patient's ID band. b. Ask the patient's name.	_____	_____
5. Explain the procedure to the patient.	_____	_____
6. Put on gloves.	_____	_____
7. Clean the hub of the heparin lock device with alcohol and allow it to dry.	_____	_____
8. Prime the heparin lock device with heparin flush solution.	_____	_____

9. Stop the flow of IV fluid. ______ ______

10. Untape the old tubing as necessary. ______ ______

11. Stabilize the catheter hub. ______ ______

12. Disconnect the old tubing. ______ ______

13. Place the heparin lock device into the catheter hub. ______ ______

14. Secure the heparin lock device. ______ ______

15. Aspirate for blood. ______ ______

16. Inject the amount of heparin solution required by the facility or manufacturer. ______ ______

17. Withdraw the syringe. ______ ______

18. Secure the heparin lock device with tape as needed. ______ ______

19. Discard equipment. ______ ______

20. Wash your hands. ______ ______

Evaluation

21. Check for patient comfort. ______ ______

Documentation

22. Document the procedure. ______ ______

Life Science
- Investigate health issues

Interactive Communications
- Apply questioning techniques
- Communicate with clients/customers/patients

Cognitive Activities
- Collect/record information
- Identify critical elements/issues
- Create a finished product

Job Acquisition/Development
- Master specific job task/procedure
- Practice good work habits/attitudes

SKILL TEST RECORD

EVALUATOR'S COMMENTS

____

____

____

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

JOB SHEET 6

ASSISTING WITH INTRAVENOUS THERAPY

5

Name ______________________________

OBJECTIVE 17 **Change an IV flow rate.**

EQUIPMENT AND SUPPLIES

- Patient or mannequin
- IV infusion pump (optional)

PROCEDURE

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary

Language
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Functional Writing
- Complete forms and records

	Yes	No
Assessment and Analysis		
1. Read the order sheet for the prescribed intravenous fluid.	____	____
2. Calculate the correct flow rate and double check your calculations.	____	____
Planning		
3. Assess the IV site. If the site is not in good condition, refer to facility policy for notification of charge nurse or other procedure.	____	____
4. Wash your hands.	____	____
5. Gather the equipment.	____	____
Implementation		
6. Identify the patient: a. Check the patient's ID band. b. Ask the patient's name.	____	____
7. Adjust the flow rate: • For gravity infusion: a. Adjust the roller clamp to increase or decrease the flow. b. Count drops for the correct rate. c. Readjust the clamp until the count for 1 full minute is the prescribed rate.	____	____

- For infusion pump:
  a. follow the manufacturer's guidelines to change the infusion rate.

10. Mark the IV container to indicate change in rate according to facility policy. ____ ____

Evaluation

11. Check for patient's comfort ____ ____

Documentation

12. Document the procedure and the condition of the site. ____ ____

Operation and Calculation
- Use exponential notations
- Calculate with whole numbers
- Calculate with fractions
- Calculate with decimals

Math Application
- Select/apply mathematical formulae

Functional Math
- Solve practical problems

Life Science
- Investigate health issues

Interactive Communications
- Apply questioning techniques
- Communicate with clients/ customers/ patients

Cognitive Activities
- Collect/record information
- Identify critical elements/issues
- Create a finished product

Job Acquisition/ Development

- Master specific job task/ procedure
- Practice good work habits/ attitudes

SKILL TEST RECORD

EVALUATOR'S COMMENTS

____

____

____

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

____

____

____

JOB SHEET 7

ASSISTING WITH INTRAVENOUS THERAPY

5

Name ______________________________

OBJECTIVE 18 **Change an IV container.**

EQUIPMENT AND SUPPLIES

- IV bag or bottle
- IV tubing
- Chart with IV orders and IV flow sheet
- Alcohol swab

PROCEDURE

Assessment and Analysis	Yes	No
1. Determine that present container is sufficiently infused.	_____	_____
☑ **NOTE:** Do not allow IV containers to empty completely (except piggyback containers).		
2. Read the orders for the IV.	_____	_____
Planning		
3. Wash your hands.	_____	_____
4. Obtain the prescribed IV fluid.	_____	_____
5. Identify the patient: a. check the patient's ID band. b. ask the patient's name.	_____	_____
Implementation		
6. Explain the procedure to the patient.	_____	_____
7. Clamp the tubing.	_____	_____
8. Prepare the new container for spike insertion:	_____	_____

Functional Reading
- Interpret forms and records
- Follow written instructions
- Use content area vocabulary

Language
- Use standard grammar, spelling, and capitalization
- State ideas clearly

Functional Writing
- Complete forms and records

Life Science
- Investigate health issues

Interactive Communications
- Apply questioning techniques
- Communicate with clients/ customers/ patients

Cognitive Activities
- Collect/record information
- Identify critical elements/issues
- Create a finished product

Job Acquisition/ Development
- Master specific job task/ procedure
- Practice good work habits/ attitudes

- Bag:
  a. Hang the bag on IV pole.
  b. Remove the protective cap.

- Bottle:
  a. Place the bottle on a stable surface.
  b. Remove the stopper covering.

  ☑ **NOTE:** If no vacuum is present when you remove the covering, do not use the bottle.

  c. Swab the stopper cover with alcohol.

9. Invert the present IV container. ______ ______

10. Remove the spike, avoiding contamination of the spike. ______ ______

11. Insert the spike into the proper port of the new container. ______ ______

12. Place the container in the proper position for infusion. ______ ______

13. Check for the correct flow rate. ______ ______

14. Label the container according to facility policy. ______ ______

15. Wash your hands. ______ ______

Evaluation

16. Check for patient's comfort. ______ ______

Documentation

17. Document procedure. ______ ______

SKILL TEST RECORD

EVALUATOR'S COMMENTS

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Performance Evaluation Key.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:

Used proper equipment correctly	4	3	2	1
Used universal precautions	4	3	2	1
Performed steps in a timely manner	4	3	2	1
Practiced safety rules throughout procedure	4	3	2	1
Provided satisfactory responses to questions asked	4	3	2	1
Put away equipment and cleaned work area	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Competency Profile, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** Can perform job with no additional training.
3 **Moderately Skilled** Has performed job during training program; limited additional training may be required.
2 **Limited Skill** Has performed job during training program; additional training is required to develop skill.
1 **Unskilled** Is familiar with process, but is unable to perform job.

EVALUATOR'S COMMENTS

PHARMACOLOGY

CIMC

READING SKILLS

UNITS OF INSTRUCTION

UNITS OF INSTRUCTION	Reading Comprehension								
	Gain factual information	Distinguish fact, opinion and inference	Recognize stereotyping and bias	Recognize propaganda	Analyze cause and effect	Draw conclusions	Make generalizations	React to written material	Apply word analysis techniques
Calculating Medication Dosages									
Documenting Medications									
Identifying Classification and Effects of Medications	●								
Administering Medications									
Assisting With Intravenous Therapy			●						

UNITS OF INSTRUCTION	Research and Reference							
	Select useful resources	Locate resources	Find materials in library	Use standard references	Use in-book reference tools	Use audiovisual media	Use computer data base	Use magazines and newspapers
Calculating Medication Dosages								
Documenting Medications								
Identifying Classification and Effects of Medications	●							
Administering Medications								
Assisting With Intravenous Therapy								

UNITS OF INSTRUCTION	Functional Reading						Language	
	Interpret forms and records	Follow written instructions	Interpret graphics and symbols	Use content area vocabulary	Interpret abbreviations/acronyms	Read aloud	Use standard grammar and correct spelling, punctuation, and capitalization	State ideas clearly
Calculating Medication Dosages				●		●	●	●
Documenting Medications	●			●	●		●	●
Identifying Classification and Effects of Medications				●			●	●
Administering Medications	●	●		●	●		●	●
Assisting With Intravenous Therapy	●	●		●	●		●	●

UNITS OF INSTRUCTION	Composition						
	Use complete sentences	Develop preliminary outline	Use topic sentences	Use introductory/closing paragraphs	Compose reports	Compose essays	Proofread and edit
Calculating Medication Dosages							
Documenting Medications							
Identifying Classification and Effects of Medications							
Administering Medications							
Assisting With Intravenous Therapy							

CIMC BASIC SKILLS DOCUMENTATION

WRITING SKILLS

MATH SKILLS

	Research					Functional Writing							Operation and Calculation														Math Application											Data Analysis and Display								
Construct graphics and symbols	Take notes	Use notecards	Create bibliography	Use footnotes	Outline material	Complete forms and records	Write instructions	Write letters	Write job applications	Write resumes	Use word processing	Use computer graphics	Round off numbers	Estimate answers	Use scientific notations	Use exponential notations	Calculate with whole numbers	Calculate with fractions	Calculate with decimals	Convert whole numbers to fractions	Convert whole numbers to decimals	Solve numerical expressions	Solve formulae and equations	Obtain squares and square roots	Convert units of measure	Perform metric calculations	Solve word problems	Select/apply mathematical formula	Select/apply mathematical procedure	Use English and metric measures	Solve time/rate/distance problems	Solve ratio/proportion problems	Solve percent problems	Apply techniques of scaling	Apply algebra principles	Apply geometry principles	Apply trigonometry principles	Interpret charts and tables	Interpret graphs (type)	Collect /record data	Apply sampling techniques	Apply principles of probability	Construct charts and tables	Construct graphs	Calculate statistics	Interpret statistics
																	●	●	●	●		●	●		●	●	●	●		●		●			●											
	●					●																																								
						●											●	●	●						●	●		●		●		●														
						●											●	●	●							●	●	●																		

MATRIX

SCIENCE SKILLS

95-011099

Functional Math															General Science									Life Science							Physical Science					Earth Science							
Interpret blueprints/plans	Make measurements	Perform banking transactions	Make change	Solve practical problems	Calculate gross earnings	Solve income/expense problems	Prepare a budget	Calculate interest	Solve interest problems	Calculate sales tax	Determine income tax	Use calculator for computation	Use computer for computation	Use computer spreadsheets	Apply computing skills	Apply scientific method of inquiry	Conduct experiments	Investigate science ethics	Investigate science history	Investigate/apply economics in technology	Use scientific instruments	Investigate/apply technology	Collect specimens	Identify/classify living organisms	Investigate biological history of the earth	Investigate food chains, webs, pyramids	Investigate/apply principles of human development	Investigate/apply principles of genetics/heredity	Investigate/apply principles of anatomy/physiology	Investigate health issues	Analyze/classify matter	Investigate forms/changes of matter	Investigate forms/changes of energy	Investigate/apply chemical properties	Investigate/apply physical laws	Investigate physical characteristics of the earth	Investigate geological history of the earth	Investigate physical forces acting on the earth	Solve problems of longitude, latitude, and time zones	Investigate conservation of physical resources	Investigate conservation of living resources	Investigate issues of environmental impact	Apply science principles to environmental issues
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	●																				●									●													
				●																										●													

CIMC

ORAL COMMUNICATION SKILLS

	Oral Presentation									Listening				Interactive Communication										General Relating										
UNITS OF INSTRUCTION	Make informative presentations	Make persuasive presentations	Present personal opinion/viewpoint	Use good speaking techniques	Select/use words effectively	Use effective body language	Present approriate appearance	Integrate audio and/or visual materials in oral presentations	Adapt presentation to specific audience	Apply active listening skills	Distinguish fact, opinion, and inference	Draw conclusions/make generalizations	Analyze/identify point of view	Give/follow oral directions	Apply questioning techniques	Conduct/receive interviews	Analyze/apply nonverbal communication	Work effectively in a group	Communicate with clients/customers/patients	Communicate with co-workers	Communicate with supervisors	Communicate with professional colleagues/associates	Apply telephone etiquette	Investigate/apply communication process models	Analyze/apply nonverbal communication	Investigate/apply cross-cultural communication	Interact with co-workers	Interact with supervisors	Interact with clients/customers/patients	Interact with professionalcolleagues/associates	Interact with family/friends	Participate in group activities	Participate in industrial relations/functions	Identify personal values/attitudes
Calculating Medication Dosages				●						●																								
Documenting Medications										●				●					●	●														
Identifying Classification and Effects of Medications																																		
Administering Medications														●					●															
Assisting With Intravenous Therapy															●	●			●															
* Use this line for entering your state or local codes for graduation requirements or learner outcomes.																																		

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INTERPERSONAL OR RELATING SKILLS

			Teamwork Cooperation															Leadership Influence						
Participate in industrial relations/functions	Identify personal values/attitudes	Apply information to life experiences	Identify values/attitudes	Identify needs/drives	Select/apply appropriate behavior	Investigate/identify personal styles	Investigate/identify group/corporate climate	Give/receive feedback	Identify hidden purposes	Investigate/apply group dynamics	Control undesirable/inappropriate behavior	Resolve conflicts	Clarify goals/objectives	Devise "win/win" situations	Build consensus	Generate ideas	Present point of view	Analyze/apply leadership styles	Analyze/apply management styles	Obtain confidence of others	Develop esteem in self/others	Persuade others	Analyze/apply motivation techniques	Provide positive coaching

CREATIVE THINKING/ PROBLEM SOLVING SKILLS

Cognitive Activities																				Job S Sele		
Collect/record information	Identify critical elements/issues	Define a problem	Identify underlying causes	Apply a problem-solving model	Analyze/synthesize information	Identify/analyze underlying assumptions	Draw conclusions	Predict results/outcomes	Identify/evaluate consequences	Identify/develop alternatives	Evaluate alternatives	Select an alternative	Devise a solution	Create a finished product	Apply intuitive/creative thinking processes	Transfer knowledge/training to new situations	Apply new technology	Develop an action plan	Evaluate results/outcomes	Analyze personal occupational aptitudes/preferences	Investigate employment prospects of a career field/occupation	Investigate training requirements for a career
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EMPLOYABILITY SKILLS

SOCIAL STUDIES SKILLS

ob Search Selection						Job Aquisition Development														Information Analysis						Social Studies Application										Functional Social Studies														
Investigate training requirements for a career field/occupation	Investigate benefits of a career field/occupation	Compare/evaluate career options	Develop personal career path	Locate appropriate jobs	Analyze duties/requirements/benefits of specific job	Master specific job task/procedure	Fill in job related applications	Write letter of application	Write personal resume	Interview for a job	Apply business etiquette	Practice good work habits/attitudes	Develop good personal presentation	Develop self confidence/esteem	Develop effective leadership	Deal effectively with supervisors	Deal effectively with co-workers	Deal effectively with professional colleagues/associates	Deal effectively with customers/clients	Collect/record data	Interpret graphical information	Construct graphical information	Interpret maps/globes	Interpret statistical information	Analyze/interpret demographic information	Investigate/apply U.S. history	Investigate/apply world history	Investigate/apply U.S. geography	Investigate/apply world geography	Investigate/apply principles of government/politics	Investigate/apply principles of economics	Investigate/apply principles of ethics	Investigate/apply principles of psychology	Investigate/apply principles of sociology	Investigate/apply cross-cultural studies	Practice responsible personal economics	Prepare a personal budget	Use credit responsibly	Practice good work ethics	Participate in industrial relations	Interact with people of different races/cultures	Investigate/participate in government	Investigate/apply American legal practices	Select/use sources of information on current events	Analyze current events	Analyze consumer issues	Analyze social issues	Analyze conservation/ecology issues	Analyze social impact of science/technology	Analyze economic impact of science/technology
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